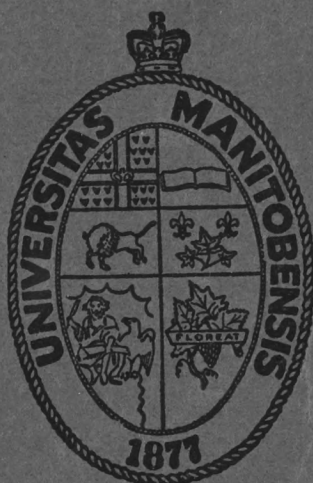


# UNIVERSITY *of* MANITOBA

WINNIPEG



Arts and Science Calendar  
Including Pharmacy  
Session 1922-23





## SPECIAL NOTICE

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The attention of all prospective students in Arts and Science is drawn to the fact that the Council of the University has instituted a scheme of General and Honor Courses in Arts to go into effect for students entering in 1923-1924, and a more extended course for the Bachelor of Science degree to go into effect for students entering in the same year. It will no longer be possible to secure the Bachelor of Arts degree in four years with the present Arts Matriculation (obtained on the completion of Grade XI), except in a General Course; a student desiring to proceed to the B.A. degree in an Honor Course must spend five years, unless he enters with a Senior Matriculation, represented by the completion of Grade XII in a High School or its equivalent, in which case he will be admitted forthwith to the Second Year of the five-year Honor Course. The General and the Honor Courses will be identical to the end of the Second Year after which they will diverge, the General Course comprising probably five subjects for each of the succeeding two years, and each Honor Course four subjects for the Third, three subjects for the Fourth and two subjects for the Fifth Year. In the case of the Science Course, it is proposed to introduce an additional year of general, cultural and preparatory work after the present First Year and before the final three years of specialization are begun. Further details will be published in the 1923-1924 calendars.

N.B. 1. The pass mark in future in all undergraduate subjects in Arts and Science is 50 per cent. (see page 88).

2. No student may register in any year who has more than one full condition (maximum, 100 marks) from the previous year recorded against him, (see pp. 22-88).



\$25-  
JA

CALENDAR

# University of Manitoba

WINNIPEG

*Incorporated by Act of the Manitoba  
Legislature, 1877*

*Definitely Reorganized as a Provincial  
University, 1917*

ARTS AND SCIENCE  
INCLUDING ALSO PHARMACY  
1922-1923

WINNIPEG  
Printed for the University by Saults & Pollard Limited  
1922





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*In the numbering of Courses of Instruction throughout this Calendar except where it is otherwise explicitly stated in a footnote, the assignment of an odd number indicates that the course is given during the first term of the annual session; that of an even number that it is given during the second term; the assignment of a double number, odd and even, that it is given throughout both terms of the session.*

## ALMANAC 1922-1923

- Aug. 1—Last day for receiving applications for the September Supplemental Examinations in Arts, Science, Architecture, Engineering, Medicine and Pharmacy.  
Applications for permission to proceed with Second and Third Year courses in Arts and Science, with indication of choice of options, should be filed with the Registrar by this date.
- 22—Last day for receiving applications for the September Matriculation Examinations, regular and supplemental.  
Applications for admission from new students with their credentials should be filed with the Registrar by this date.
- Sept. 5—Supplemental and Matriculation Examinations begin.  
Surveying School begins.  
Registration in Medicine begins.  
Registration in Law begins.  
Board of Studies meets.
- 8—Imposition of fine for late registration in Medicine begins.
- 9—Registration closes in Medicine at 5 p.m. Last day for payment of fees in Medicine.
- 11—Lectures in Law begin. Imposition of fine for late registration in Law begins.
- 13—First meeting of Arts and Science Faculty.
- 19—Registration in Arts, Science and Pharmacy begins.  
Board of Studies meets.
- 20—Regular monthly meeting of Arts and Science Faculty.
- 21—Lectures begin in Arts, Science and Pharmacy.  
Imposition of fine for late registration in Arts, Science, and Pharmacy begins.  
University Council meets.
- Oct. 2—Registration begins in Engineering and Architecture.  
Registration closes in Arts, Science, Pharmacy and Law at 5 p.m. Last day for payment of fees in these faculties.  
General Faculty Council meets.
- 3—Board of Studies meets.
- 4—Imposition of fine for late registration in Engineering and Architecture begins.  
Lectures begin in Engineering and Architecture.
- 5—Registration closes in Engineering and Architecture at 5 p.m.  
Last day for payment of fees in Engineering and Architecture.
- 17—Board of Studies meets.
- 18—Regular monthly meeting of the Arts and Science Faculty.
- Nov. 6—General Faculty Council meets.
- 7—Board of Studies meets.
- 13—Payment of first moiety of scholarships.
- 15—Regular monthly meeting of Arts and Science Faculty.
- 16—University Council meets.
- 21—Board of Studies meets.
- 22—Last day for receiving applications for December Supplemental and Special Examinations in Arts, Science, Medicine, Engineering, Architecture and Pharmacy.
- Dec. 4—General Faculty Council meets.
- 5—Board of Studies meets.
- 12—Lectures close for students in Arts, Science, and Pharmacy, who write December Examinations.
- 13—December Examinations begin in above faculties.
- 16—Lectures close in Engineering and Architecture.
- 18—December examinations in Engineering and Architecture begin.

- Dec. 19—Board of Studies meets.  
 20—Regular monthly meeting of Arts and Science Faculty.  
 22—Lectures close in Medicine, Law and for students in other faculties who do not write December Examinations.
- 1923 -
- Jan. 2—Board of Studies meets.  
 3—University lectures resumed in all faculties.  
 8—Last date for payment of second term fees and degree fees for graduating students.  
 General Faculty Council meets.  
 16—Board of Studies meets.  
 17—Regular monthly meeting of Arts and Science Faculty.  
 18—University Council meetings.
- Feb. 5—General Faculty Council meets.  
 6—Board of Studies meets.  
 12—Payment of second moiety of scholarships.  
 20—Board of Studies meets.  
 21—Regular monthly meeting of Arts and Science Faculty.
- Mar. 5—General Faculty Council meets.  
 6—Board of Studies meets.  
 9—Most Rev. Robert Machray, D.D., LL.D., Archbishop of Ruperts Land, first Chancellor of the University, died, 1904.  
 12—Examinations in Architecture for the Manitoba Association of Architects begin.  
 15—University Council meets.  
 20—Board of Studies meets.  
 21—Regular monthly meeting of Arts and Science Faculty.  
 26—Last day for receiving applications for April Supplemental and Special Examinations in Arts, Science, Medicine and Pharmacy.
- April 2—General Faculty Council meets.  
 3—Board of Studies meets.  
 6—Lectures in Law close.  
 13—Lectures in Arts, Science and Pharmacy close.  
 16—First Term Supplemental Examinations in above faculties begin.  
 17—Board of Studies meets.  
 18—Lectures in Engineering and Architecture close.  
 Regular monthly meeting of Arts and Science Faculty.  
 19—Final Examinations in Engineering and Architecture begin.\*  
 23—Final Examinations in Arts, Science, Pharmacy and Law begin.†  
 30—Final Examinations in Medicine (Fifth Year) begin.
- May 1—Board of Studies meets.  
 17—Convocation for conferring of degrees in Arts, Science, Medicine, Engineering, Architecture, Pharmacy, Law, Agriculture and Home Economics.  
 18—Lectures in Medicine close.  
 19—Examinations in Medicine begin.
- June 5—Board of Studies meets.  
 11—Dental License Examination begins.  
 12—Nurses' Registration Examination begins.  
 21—University Council meets.

\*First Term Supplement Examinations in Engineering and Architecture will be given on dates to be arranged during the course of the Second Term.

†The practical Examinations in Arts, Science, Medicine, Engineering and Pharmacy will be held by arrangement of the Departments concerned, in April, prior to the opening of the written Examinations or during their progress. The dates of the Examinations in Agriculture and Home Economics will be fixed by Manitoba Agricultural College.



## THE UNIVERSITY OF MANITOBA

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### HISTORICAL SKETCH

The University of Manitoba was established by Act of the Manitoba Legislature, in 1877, "for the purpose (as the preamble states) of raising the standard of higher education in the Province and of enabling all denominations and classes to obtain academic degrees." The government of the University was vested in a Chancellor, a Vice-Chancellor and a University Council, with powers as a "body politic and corporate" to receive, hold and sell property, to arrange courses of study, to hold examinations and to grant degrees. The Act provided for the affiliation of Colleges and for the granting of degrees in Divinity by those Colleges to students who should have obtained recognized academic standing in Arts subjects. The Chancellor was to be appointed by the Lieutenant-Governor-in-Council, and the University Council was to consist of seven representatives from each of the affiliated Colleges, three from Convocation and two from the Board of Education of the Province.

The three Colleges already in existence in Manitoba were affiliated with the University at its inception. St. John's, the Anglican institution had been reorganized in 1866 by Bishop (afterwards Archbishop) Machray, who became in 1877 the first Chancellor of the University. St. Boniface had grown from a mission school early in the century to be the chief Roman Catholic College of the West. Manitoba College, in connection with the Presbyterian Church, had been organized in 1871. The Vice-Chancellor of the new University was the Hon. Joseph Royal; the Bursar was Mr. Duncan Macarthur; and the Registrar Mr. E. W. Jarvis.

Since 1877 four Colleges have been received into affiliation with the University. The Manitoba Medical College was affiliated in 1882, Wesley College was affiliated in 1888, the Manitoba College of Pharmacy in 1902, and the Manitoba Agricultural College in 1907.

In 1885 an agreement between the Dominion Government and the Province of Manitoba provided for an endowment not exceeding 150,000 acres of land for the University of Manitoba "for its maintenance as a University capable of giving proper training in the higher branches of education."

In 1900 an amendment to the University Act gave the University "power to give instruction and teaching in the several faculties and different branches of knowledge as may from time to time be directed by the Council of the University." The present site was granted by the Dominion Government, and the corner-stone was laid in 1900 by the King, then Duke of Cornwall and York. Four new chairs in the Natural and Physical Sciences were founded in 1904, and as well one in Mathematics and one in the combined subjects of Histology, Pathology and Bacteriology. The number of Science chairs was subsequently increased to six, Geology and Mineralogy, which at the first was combined in part with Botany and in part with Physics, being given independent status, and as well Zoology, which at first was attached to Physiology. A department of Civil Engineering was organized in 1907, and departments of Electrical Engineering, Political Economy, English and History in 1909. Departments of Architecture, of French and of German were created in 1913, and began their work in the fall of that year. In the fall of 1914 the following new departments were instituted: A department of Pharmacy, which took over the teaching in

this subject formerly done by the Manitoba College of Pharmacy; a department of Mechanical Engineering; a department of Classics. In addition, the work of the departments of English, French, German, History and Political Economy, which had hitherto been confined to the subjects of the Third and Fourth Years in Arts, was extended to include those of the First and Second Years and the department of Mathematics, which had hitherto covered only the Second, Third and Fourth Years, assumed responsibility for the work of the First Year as well. The University thus came into the position of offering for the first time through its own faculty the full work of the course in Arts for the B.A. degree.

The affiliation of Manitoba Agricultural College with the University was terminated by an Act of the Provincial Legislature in 1912 but restored again in 1916.

The first President of the University, Dr. James A. MacLean, assumed office on January 1st, 1913.

By the University Amendment Act, 1917, there has been introduced into the corporation a Board of Governors of nine members, appointed by the Lieutenant-Governor-in-Council for a period of three years, three retiring each year, and in this Board is vested "the government, conduct, management and control of the University," including its lands, investments, appointments, limits of instruction, etc. The Council of the University has been continued, but with a reduction in the number of its members from seventy-two to twenty-eight and a limitation of the sphere of its activity to that of "general charge of the academic work of the University," within which range it is still subject to the plenary power vested in the Board of Governors. Its representative character is maintained as is shown by the following composition: The Chancellor, the President, four representatives from the faculty of the University, two representatives from Manitoba Agricultural College, one representative from Manitoba Medical College, one representative from the College of Physicians and Surgeons of Manitoba, six members to be appointed by the Lieutenant-Governor-in-Council, four representatives to be elected by Convocation and two representatives from each of the affiliated Arts Colleges, St. Boniface, St. John's, Manitoba and Wesley. Definite legislative recognition is given to the practice of the submission annually to the Lieutenant-Governor-in-Council through the Minister of Education of a budget of "anticipated revenues and proposed expenditures" and of the appropriation by the Legislature of money for University expenditures.

During the session 1919-1920, an agreement was reached with the Faculty of Manitoba Medical College whereby that institution passes out of existence upon the assumption by the University of responsibility for the maintenance of medical teaching in an adequate manner. In pursuance of this arrangement a full Medical Faculty has been appointed and a faculty organization completed.

Provision has also been made for the teaching by the University of philosophy, including metaphysics, ethics and psychology, and a chair of Philosophy and Psychology has been established.

The Board of Governors completed a reorganization of the University Faculty which became effective on June 1st, 1921. Three faculties were established, viz., the Faculty of Arts and Science, the Faculty of Engineering and the Faculty of Medicine, with a Dean of each Faculty. A General Faculty Council was also instituted.

## COLLEGES AFFILIATED WITH THE UNIVERSITY

---

*St. Boniface College, St. Boniface*, in connection with the Roman Catholic Church. *Rector*—Rev. H. Bourque, S.J., St. Boniface College.

*St. John's College, Winnipeg*, in connection with the Church of England. *Warden*—Rev. G. A. Wells, C.M.G., B.A., St. John's College.

*Manitoba College, Winnipeg*, in connection with the Presbyterian Church in Canada. *Principal*—Rev. John MacKay, M.A., D.D., Manitoba College.

*Wesley College, Winnipeg*, in connection with the Methodist Church in Canada. *President*—Rev. J. H. Riddell, B.A., D.D., 223 Colony Street.

*Manitoba Law School, Winnipeg. Chairman of Trustees*—Hon. H. A. Robson, K.C., LL.D., Union Bank Building.

*Manitoba Agricultural College. President*—John Bracken, B.S.A., Agricultural College, St. Vital.

*Visitor*

SIR JAMES AIKINS, M.A., LL.D., K.C.  
Lieutenant-Governor of Manitoba

*Chairman of Board of Governors*

ISAAC PITBLADO, M.A., LL.D., K.C.

*Vice-Chairman of Board of Governors*

JOHN A. MACHRAY, M.A., LL.B., K.C.

*Chancellor*

MOST REV. S. P. MATHESON, D.D., D.C.L.  
Archbishop of Rupert's Land

*Vice-Chancellor*

RIGHT REV. MSGR. A. A. CHERRIER, LL.D.

*President*

JAMES A. MacLEAN, Ph.D., LL.D.

*Honorary Bursar*

JOHN A. MACHRAY, M.A., LL.B., K.C.

*Registrar*

W. J. SPENCE, B.A.



BOARD OF GOVERNORS, 1921-22

---

*Chairman:*

ISAAC PITBLADO, M.A., LL.D., K.C.

*Vice-Chairman:*

JOHN A. MACHRAY, M.A., LL.B., K.C.

*Secretary:*

W. J. SPENCE, B.A.

*Appointed for a three-year term expiring in 1922:*

THOMAS JOSEPH MURRAY, of Winnipeg.  
JOHN ALEXANDER MACHRAY, of Winnipeg  
WILLIAM IVERACH, of Isabella.

*Appointed for a three-year term expiring in 1923:*

ISAAC PITBLADO, of Winnipeg.  
ROBERT THOMAS RILEY, of Winnipeg.  
JOHN ROBERT LITTLE, of Brandon.

*Appointed for a three-year term expiring in 1924:*

HENRY HAVELOCK CHOWN, M.D., of Winnipeg  
NORMAN PLATT LAMBERT, B.A., of Winnipeg.  
ALMON JAMES COTTON, of Swan River.

# COUNCIL OF THE UNIVERSITY, 1921-1922

## *Chairman:*

MOST REV. S. P. MATHESON, D.D., D.C.L., Archbishop of  
Rupert's Land, Chancellor.

## *Vice-Chairman:*

RIGHT REV. MSGR. A. A. CHERRIER, LL.D.

## *President of the University:*

JAMES A. MacLEAN, Ph.D., LL.D.

## *Appointed by the General Faculty Council of the University:*

W. TIER, M.A.  
E. P. FETHERSTONHAUGH, M.C., B.Sc.  
S. W. PROWSE, M.D., C.M., F.A.C.S.  
R. C. WALLACE, M.A., Ph.D., D.Sc.

## *Appointed by the Manitoba Agricultural College:*

JOHN BRACKEN, B.S.A., President.  
G. A. SPROULE, B.A.

## *Appointed by the College of Physicians and Surgeons of Manitoba:*

THOS. TURNBULL, M.D.

## *Appointed by the Lieutenant-Governor-in-Council:*

ROBERT FLETCHER, B.A.  
MRS. R. F. McWILLIAMS, M.A.  
WILLIAM A. McINTYRE, B.A., LL.D.  
FRANK H. SCHOFIELD, M.A.  
REV. JOHN L. BROWN  
ELIZABETH S. COLWELL, B.A.

## *Elected by the Graduates of the University:*

D. M. DUNCAN, M.A.  
E. LOFTUS, M.A., LL.B., K.C.  
DANIEL McINTYRE, M.A., LL.D.  
R. W. CRAIG, M.A., LL.B.

## *Appointed by St. Boniface College:*

REV. H. BOURQUE, S.J., Rector.  
RIGHT REV. MSGR. A. A. CHERRIER, LL.D.

## *Appointed by St. John's College:*

VERY REV. G. F. COOMBES, M.A., D.D.\*  
REV. E. A. W. GILL, M.A.

## *Appointed by Manitoba College:*

REV. A. B. BAIRD, M.A., D.D.  
REV. J. MACKAY, M.A., D.D., Principal.

## *Appointed by Wesley College:*

REV. J. H. RIDDELL, B.A., D.D., President.  
REV. A. STEWART, D.D.

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\*During the absence of Dean Coombes through illness his place was taken by Rev. G. A. Wells, C.M.G., B.A., Warden.

## STANDING COMMITTEES OF THE UNIVERSITY COUNCIL, 1921-1922

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*Board of Studies:* President MacLean, (Chairman), Dean Tier, Dean Fetherstonhaugh, Dean Prowse, Professor R. C. Wallace, Very Rev. Dean Coombes,\* Rev. Father Bourque, Rev. Dr. Baird, Rev. Dr. Riddell, Professor G. A. Sproule, D. M. Duncan, Dr. W. A. McIntyre, W. J. Spence, W. B. H. Teakles (Secretary).

*Library Committee:* (Appointed by the General Faculty Council): Professor Heinzelmann (Chairman), MacLean, Buller, Finlayson, Grant and F. W. Clark, Dean Thorson, F. E. Nuttall (Secretary).

*Committee on Organization of Instruction:* The Chancellor (Chairman), President MacLean, Dean Tier, Dean Fetherstonhaugh, Dean Prowse, Rev. Dr. MacKay, Rev. Dr. Stewart, E. Loftus, R. Fletcher, Dr. D. McIntyre, W. J. Spence (Secretary).

*Committee on Extension Work:* The Chancellor (Chairman), President MacLean, Rev. J. L. Brown, Robert Fletcher, Dr. W. A. McIntyre, Mrs. R. F. McWilliams, Professor R. C. Wallace, H. A. Robson, President Bracken, Rev. Dr. Riddell, R. W. Craig, W. J. Spence, Professor W. T. Allison (Secretary).

*Committee on Honorary Degrees:* The Chancellor (Chairman), President MacLean, Dr. D. McIntyre, Dev. Dr. Baird, Rev. Father Bourque, R. W. Craig, W. J. Spence (Secretary).

*Advisory Committee on Commercial Education:* C. C. Ferguson (Chairman), President MacLean, John Parton, G. N. Jackson, Walter Mitham, D. McIvor, Professor A. B. Clark, W. J. Spence, J. H. Curle (Secretary).

*Advisory Committee on Social Service Teaching:* Judge D. W. McKerchar (Chairman), President MacLean, G. B. Clarke, D. B. Harkness, Mrs. R. F. McWilliams, W. J. Spence, Professor D. C. Harvey (Secretary).

*Representatives on the Board of Manitoba Law School:* E. Loftus, W. J. Spence.

*Representative on the General Council of the University of Manitoba Students' Union:* W. J. Spence.

*Representative on the Athletic Council of the University of Manitoba Students' Union:* Professor N. B. MacLean.

*Representative on the Social Committee of the University of Manitoba Students' Union:* Mrs. U. N. Macdonnell.

*Representative on the Debating Committee of the University of Manitoba Students' Union:* Professor D. C. Harvey.

*Representative on the Executive of the Dramatic Society of the University of Manitoba Students' Union:* Professor J. H. Heinzelmann.

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\*During the absence of Dean Coombes through illness, his place was taken by Rev. G. A. Wells, C.M.G., B.A., Warden.

### GENERAL FACULTY COUNCIL, 1921-1922

---

President MacLean (Chairman), Dean Tier, Dean Fetherstonhaugh, Dean Prowse, Mrs. U. N. Macdonnell, Professor Frank Allen, Professor A. H. R. Buller, Professor M. A. Parker, Professor A. B. Clark, Professor A. W. Crawford, Professor Chester Martin, Professor N. B. MacLean, Professor R. C. Wallace, Professor A. A. Stoughton, Professor W. F. Osborne, Professor J. H. Heinzelmann, Professor H. E. Bletcher, Professor F. W. Clark, Very Rev. G. F. Coombes, Professor N. R. Wilson, Professor C. H. O'Donoghue, Professor H. W. Wright, Professor R. C. Lodge, Professor J. N. Finlayson, Professor Gordon Bell, Professor Wm. Boyd, Professor J. C. B. Grant, Professor V. H. K. Moorhouse, Professor E. W. Montgomery, Professor J. Halpenny, Professor C. C. Field,\* Professor R. M. Simpson, Professor D. H. McCalman, W. J. Spence (Secretary).

---

\*Deceased.



## UNIVERSITY FACULTY OF ARTS AND SCIENCES, 1921-1922

---

WILLIAM TIER, M.A. (Tor.) <i>Dean and Chairman of Faculty</i> .....	72 Arlington Street
FRANK ALLEN, M.A. (U.N.B. and Cornell), Ph.D. (Cornell), F.R.S.C. <i>Professor of Physics</i> .....	117 Harvard Ave.
A. H. REGINALD BULLER, B.Sc. (Lond.), Ph.D. (Leipzig), D.Sc. (Birm.) F.R.S.C. <i>Professor of Botany</i> .....	MacLaren Hotel
MATTHEW A. PARKER, B.Sc. (Glas.), F.I.C., F.C.I.C., F.R.S.C. <i>Professor of Chemistry</i> .....	7 Chelsea Court
ARCH. BROWN CLARK, M.A. (Edin.) <i>Professor of Political Economy</i> .....	Suite 35, The Roslyn
ALEXANDER W. CRAWFORD, M.A. (Tor.), Ph.D. (Cornell). <i>Professor of English</i> .....	948 McMillan Ave.
CHESTER MARTIN, M.A. (U.N.B.), M.A., B.Litt. (Oxon.). <i>Professor of History</i> .....	696 Westminster Ave.
NEIL BRUCE MacLEAN, D.S.O., M.A. (Tor.), F.R.A.S.C. <i>Professor of Mathematics</i> .....	292 Assiniboine Ave.
ROBT C. WALLACE, M.A., B.Sc. (Edin.), Ph.D. (Gottingen), D.Sc. (Edin.), F.G.S., F.R.S.C. <i>Professor of Geology and Mineralogy</i> .....	64 Home Street
WILLIAM F. OSBORNE, M.A. (Tor.) <i>Professor of French Language and Literature</i> ....	University of Manitoba
JACOB HAROLD HEINZELMANN, B.A. (Illinois), Ph.D. (Chicago) <i>Professor of German Language and Literature</i> .....	880 Grosevnor Ave.
HENRY ERNEST BLETCHER, B.Sc. (Phar.), F.C.I.C. <i>Professor of Pharmacy</i> .....	152 Lenore Street
FREDERICK WILLIAM CLARK, B.A. (Man.), Ph.D. (Chicago) <i>Professor of Latin and Greek</i> .....	196 Elm Street
VERY REV. GEO. FREDERICK COOMBES, M.A. (Cantab.), D.D. <i>Professor of Latin and Greek</i> .....	The Deanery, St. John's
NORMAN RICHARD WILSON, M.A. (Toronto), Ph.D. (Chicago) <i>Professor of Mathematics</i> .....	75 Sherbrook Street
CHARLES H. O'DONOGHUE, D.Sc. (London), F.Z.S. <i>Professor of Zoology</i> .....	63 Genthon Street, St. Boniface
HENRY W. WRIGHT, B.A. (Cornell), Ph.D. (Cornell) <i>Professor of Philosophy and Social Ethics</i> .....	894 Wolseley Ave.
RUPERT C. LODGE, M.A. (Oxon.) <i>Professor of Logic and History of Philosophy</i> .....	92 Spence Street
ROBERT K. McCLUNG, M.A. (McGill), B.A. (Cantab.), D.Sc. (McGill), F.R.S.C. <i>Assistant Professor of Physics</i> .....	88 Chestnut Street
LLOYD A. H. WARREN, M.A. (Queen's), Ph.D. (Chicago), F.R.A.S. <i>Assistant Professor of Mathematics</i> .....	64 Niagara Street
HENRY P. ARMES, B.Sc. (Leeds), Ph.D. (Strasburg), F.C.I.C. <i>Assistant Professor of Chemistry</i> .....	101 Devon Court

AARON J. PERRY, M.A. (Acadia and Yale) <i>Assistant Professor of English</i> .....	61 Home Street
WILLIAM TIER, M.A. (Toronto) <i>Assistant Professor of Mathematics</i> .....	72 Arlington Street
JUSTIN S. DE LURY, B.A. (Toronto) <i>Assistant Professor of Geology</i> .....	202 Devon Court
EDWARD M. BURWASH, M.A. (Tor.), Ph.D. (Tor. and Chicago) <i>Assistant Professor of Geology ad interim</i> .....	3 University Place
JOHN W. SHIPLEY, M.A. (Man.), Ph.D. (Harvard), F.C.I.C. <i>Assistant Professor of Chemistry</i> .....	354 Florence Ave.
HERBERT F. ROBERTS, B.A. (Kan.), M.Sc. (Kan.), F.A.A.S. <i>Assistant Professor of Botany</i> .....	62 Home Street
WILLIAM TALBOT ALLISON, M.A. (Tor.), Ph.D. (Yale) <i>Assistant Professor of English</i> .....	254 Furby Street
DANIEL C. HARVEY, B.A. (Dal.), M.A. (Oxon.) <i>Assistant Professor of History</i> .....	124 Chestnut Street
JOHN W. TAYLOR, M.A. (Toronto), Ph.D. (Chicago) <i>Assistant Professor of Greek and Latin</i> .....	109 Woodhaven Blvd.
REGINALD F. JONES, M.A. (Liverpool) <i>Assistant Professor of Political Economy</i> .....	Suite 14, Conway Court
C. D. MILLER, B.S. (Richmond), Ph.D. (Chicago) <i>Assistant Professor of Physics</i> .....	286 Balmoral Street
W. M. HUGILL, B.A. (Toronto) <i>Assistant Professor of Greek and Latin</i> .....	University of Manitoba
URSILLA N. MACDONNELL, M.A., Ph.D. (Queen's) <i>Dean of Women</i> .....	243 Elm Street
C. F. CURTIS RILEY, M.A. (Doane), B.S. (Michigan), M.S. (Ill.) <i>Assistant Professor of Zoology</i> .....	University of Manitoba
FLORA ROSS AMOS, B.A. (Tor.) Ph.D. (Col.) <i>Assistant Professor of English</i> .....	University of Manitoba
FREDERICK CHARLES GREEN, M.C., M.A. (St. Andrews), Ph.D. (Cologne) <i>Assistant Professor of French</i> .....	9 Stuart Court
FREDERICK STANLEY NOWLAN, M.A. (Harvard) <i>Assistant Professor of Mathematics</i> .....	148 Langside St.
CELINE A. BALLU, M.A. (Wis.) <i>Lecturer in French</i> .....	University of Manitoba
A. MARIE HAYNAUD, B.A. (Queen's) <i>Lecturer in French</i> .....	161 Maryland, Street
CHARLES W. LOWE, M.Sc. (Birmingham) <i>Lecturer in Botany</i> .....	1588 Wolseley Ave. W.
EILEEN BULMAN, M.A. (Columbia), B.Sc. (Man.) <i>Lecturer in Zoology</i> .....	139 Middle Gate
JOSEPH E. HOWE, B.A. (Acadia and Yale), M.A. (Acadia) <i>Lecturer in History</i> .....	72 Chestnut Street

This Faculty also includes one representative of each department of other Faculties which gives instruction in the Faculty of Arts and Sciences, the President and the Registrar.

# SESSIONAL APPOINTMENTS FOR 1921-1922

- 
- LILY A. McCULLOUGH, M.A. (Man.), LL.B. (Man.)  
*Assistant in Political Economy*.....676 Spruce Street
- JOHN A. M. EDWARDS, M.A. (Man.)  
*Instructor in English*.....201 Balmoral Street
- HELEN BRYCE, B.A. (Man.)  
*Assistant in German*.....372 Assiniboine Ave.
- DOROTHY MACKAY, B.A. (Man.)  
*Demonstrator in Chemistry*.....296 Yale Ave.
- IVAN R. McHAFFIE, B.A. (Man.), B.Sc. (Man.)  
*Demonstrator in Chemistry.*
- MICHAEL S. HOLLENBERG, M.A. (Man.)  
*Demonstrator in Physics.*
- ABRAHAM HOLLENBERG, B.A. (Man.)  
*Demonstrator in Physics.*
- JOHN S. ABEL, B.Sc. (C.E.) (Man.)  
*Demonstrator in Physics.*
- A. S. WILLIAMS, B.Sc. (E.E.) (Man.)  
*Demonstrator in Physics.*
- IDA KIRK SCOTT, B.A. (Man.)  
*Demonstrator in Botany.*
- V. VALGARDSSON, B.A. (Man.)  
*Fellow in Mathematics.*
- CLIFFORD A. MERRITT  
*Demonstrator in Chemistry*.....808 Alverstone Street
- CATHERINE MORGAN,  
*Demonstrator in Chemistry*

### ADMINISTRATIVE STAFF, 1921-1922

---

<i>President</i> .....	JAMES A. MacLEAN, Ph.D., LL.D.
<i>Registrar</i> .....	W. J. SPENCE, B.A.
<i>Assistant Registrar</i> .....	W. B. H. TEAKLES, B.A.
<i>Honorary Bursar</i> .....	J. A. MACHRAY, M.A., LL.B., K.C.
<i>Secretary University Land Board</i> .....	R. H. SHANKS
<i>Accountant</i> .....	S. K. FORDE
<i>Dean of Faculty of Arts and Science</i> .....	W. TIER, M.A.
<i>Dean of Faculty of Engineering and Architecture</i> .....	E. P. FETHERSTONHAUGH, M.C., B.Sc.
<i>Dean of the Faculty of Medicine</i> .....	S. W. PROWSE, B.A., M.D., C.M.
<i>Dean of Women</i> .....	MRS. URSILLA N. MACDONNELL, M.A.
<i>Librarian</i> .....	F. E. NUTTALL, M.A.

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*President's Secretary:* NORA E. BELL, B.A.

*Registrar's Assistants:* S. HELENA MACVICAR, C. F. BLACK, B.A.,  
G. C. YOUNG, HELEN M. PRESCOTT, GLADYS TREMAYNE,  
LILLIAN COOK, MABEL NASH, BEATRICE M. ALEXANDER,  
B.A.

*Accountant's Assistant:* NELL. V. RAISBECK.

*Library Assistants:* J. ADINA FALCONER, B.A., HORATIO WAL-  
LACE, M.A., FLORENCE BISSETT, B.A., EDNA GREER, B.A.  
(Engineering Library).

*Buildings and Grounds—Mechanic:* A. BOWLEY; *Carpenter:* E. MOXAM;  
*Assistant Carpenter:* J. R. BENTHAM; *Caretakers:* JAMES CHALK,  
ANDREW P. COX, JOSEPH SAMMONS, HARRY ROBBINS  
HARRY PLANK, T. R. WATTS, STANLEY SHELDRAKE,  
H. COPPLE, S. JOHANNSON, JOS. PIPER. J. H. HANGGI, G. A.  
FINNISON, DUNCAN FRASER.

## UNIVERSITY EXAMINERS, 1921-1922

## ARTS AND SCIENCE

*Classics:* Professors Coombes and Clark, Rev. J. W. Matheson (St. John's), Professor Johnson (Wesley), Assistant Professor Taylor, Assistant Professor Hugill, Rev. T. J. Mullally (St. Boniface), Rev. G. Hacault (St. Boniface).

*Biblical Greek:* Rev. Dr. Riddell (Wesley), Rev. Dr. Baird (Manitoba), Rev. J. W. Matheson (St. John's).

*Hebrew:* Rev. Dr. Stewart (Wesley), Rev. Dr. Perry (Manitoba), Rev. J. W. Matheson (St. John's), Rev. A. E. Hetherington (Wesley).

*English:* Professor Crawford, Rev. E. A. W. Gill (St. John's), Assistant Professor Perry, Assistant Professor Allison, Professor A. L. Phelps, (Wesley), Professor R. F. Argue (Wesley), Assistant Professor Amos, Rev. T. J. Mullally (St. Boniface), Mr. J. A. M. Edwards.

*French:* Professor Osborne, Professor A. D. Baker (St. John's), Assistant Professor Green, Miss C. A. Ballu, Miss C. F. Armstrong (Wesley), Miss A. M. Haynaud, Miss Lillian Johnston (Wesley), Rev. G. Hacault (St. Boniface).

*German:* Professor Heinzelmann, Professor A. D. Baker (St. John's), Miss Helen Bryce.

*Icelandic:* Professor Johnson (Wesley), Rev. R. Marteinsson.

*Philosophy:* Professor Lodge, Professor Wright, Rev. Dr. Baird (Manitoba), Professor W. G. Smith (Wesley), Rev. Dr. Fleming (Manitoba), Rev. Dr. Elliott (Wesley), Rev. W. C. de Pauley (St. John's), Rev. P. Bournival (St. Boniface).

*Political Economy:* Professor Clark, Rev. Dr. Elliott (Wesley), Professor J. F. Cross (St. John's), Assistant Professor Jones, Miss L. A. McCullough, Rev. F. L. Porcheron (St. Boniface).

*History:* Professor Martin, Assistant Professor Harvey, Rev. E. A. W. Gill (St. John's), Mr. J. E. Howe, Mr. H. M. Thomas (Wesley), Mr. A. Brady (Wesley), Mrs. U. N. Macdonnell, Rev. G. Hacault (St. Boniface), Rev. T. J. Mullally (St. Boniface).

*Mathematics and Astronomy:* Professor MacLean, Professor Wilson, Assistant Professor Warren, Professor J. F. Cross (St. John's), Assistant Professor Tier, Professor O. T. Anderson (Wesley), Mr. F. S. Nowlan, Mr. V. Valgardsson, Rev. A. Dube (St. Boniface).

*Physics:* Professor Allen, Assistant Professor McClung, Professor J. F. Cross (St. John's), Assistant Professor Miller, Professor O. T. Anderson (Wesley), Mr. J. S. Abel, Mr. A. Hollenberg, Mr. M. S. Hollenberg, Mr. A. S. Williams, Rev. A. Dube (St. Bonifaces).

*Botany:* Professor Buller, Assistant Professor Roberts, Mr. C. W. Lowe, Rev. F. L. Porcheron (St. Boniface).

*Geology and Mineralogy:* Professor Wallace, Assistant Professor DeLury, Assistant Professor Burwash.

*Chemistry:* Professor Parker, Assistant Professor Armes, Assistant Professor Shipley, Rev. A. Dube (St. Boniface).

*Physiology:* Professor Moorhouse, Associate Professor A. T. Cameron.

*Zoology:* Professor O'Donoghue, Assistant Professor Riley, Miss Eileen Bulman, Rev. F. L. Porcheron.

*Biochemistry:* Associate Professor Cameron, Professor Moorhouse.

*Pharmacy:* Professor Bletcher, Mr. H. D. Campbell.

*Architecture:* Professor Stoughton, Professor Finlayson, Mr. C. F. Cameron.

*Education:* (Special Course for Teachers)—Professor Lodge, Dr. W. A. McIntyre, Major C. K. Newcombe.

## CURRICULA IN ARTS

The University of Manitoba confers two degrees in Arts, viz., Bachelor of Arts (B.A.) and Master of Arts (M.A.). The following are the requisites for proceeding in course to admission to these degrees:

### I.—BACHELOR OF ARTS

#### Matriculation

The requirements for Matriculation for Arts are set forth in detail in the Matriculation Calendar.

#### Undergraduate Course in Arts

After having matriculated, the student of Arts is required to pass four examinations before being admitted to the degree of Bachelor of Arts, viz., the First, the Second, the Third and the Fourth Year Examinations.

#### FIRST YEAR ARTS

The course of study in the First Year in Arts is made up of five subjects, to be selected on the following plan (each subject representing four lecture hours per week or their equivalent, a laboratory period of either two or three hours to count as one lecture hour):

1. English (Courses 9, 10, 11, 12, page 36).
2. Mathematics (Courses 1, 4, page 51).
3. A foreign language (already taken for matriculation), either Latin (Courses 1, 2, 3, 4, page 33); or Greek (Courses 3, 4, page 30); or French (Courses 1, 2, 3, 4, page 39); or German (Courses 3, 4, 5, 6, page 42);
4. Any *two* of the following\* (the language already taken in 3 being barred): Latin (Courses 1, 2, 3, 4, page 33); Greek (Courses 1, 2, or 3, 4, page 30); Biblical Greek† (Courses 1, 2, page 32); French (Courses 1, 2, 3, 4, page 39); German (Courses 3, 4, 5, 6, page 42); Elementary German‡ (Courses 1, 2, page 42); Hebrew (Courses 1, 2, page 70); Icelandic (Courses 1, 2, 3, 4, page 72); History (Courses 1, 2, page 46); §Mathematics (Courses 5, 6, 7, 10, page 51); Physics (Courses 1, 2, 3, 4, page 56); Chemistry (Courses 1, 2, 21, 22, page 63).

N.B. The subjects of the above curriculum will be grouped for timetable purposes by the University Faculty as follows, the groups being kept clear of conflict with one another, but not necessarily the subjects within the groups: (a) English; (b) Mathematics, (required); (c) Latin, Chemistry; (d) French, Icelandic, Hebrew; (e) German, Greek; (f) History, Mathematics (optional); (g) Physics.

#### FIRST YEAR ARTS AND SCIENCE

##### (Pre-Engineering Year)

The course of study in the Pre-Engineering Year is as follows:

1. English (Courses 1, 2, 3, 4, or 9, 10, 11, 12, pages 35 and 36).
2. Mathematics (Courses 1, 4, 5, 6, 9, 10, page 51).
3. Chemistry (Courses 1, 2, 21, 22, page 63).
4. Drawing (Courses 1, 2, 3, 4, page 70).
5. One of the following: Latin (Courses 1, 2, 3, 4, page 33); Greek (Courses 1, 2, or 3, 4, page 30); French (Courses 5, 6, page 39); German (Courses 1, 2, or 3, 4, 5, 6, page 42).

\*A student who has not taken both Physics and Chemistry for Matriculation must elect one Science subject in either the First or the Second Year.

†This option is open only to those who have not taken Matriculation Greek.

‡This option is open only to those who have not taken Matriculation German.

§Students intending to take in their Third Year, Mathematics, or any division of the Natural and Physical Science involving Physics, are recommended to choose Mathematics as an option in First Year.

## FIRST YEAR ARTS AND SCIENCE

### (First Pre-Medical Year)

The course of study in the First Pre-Medical Year is as follows:

1. English (Courses 1, 2, 3, 4, or 9, 10, 11, 12, pages 35 and 36).
2. Mathematics (Courses 1 or 11, page 51).
3. Physics (Courses 1, 2, 3, 4, page 56).
4. Chemistry (Courses 1, 2, 21, 22, page 63).
5. Botany (Courses 1, 2, 3, 4, page 58).
6. Zoology (Courses 6, 8, page 68).
7. One of the following: Latin (Courses 1, 2, 3, 4, page 33); French (Courses 5, 6, page 40); German (Courses 1, 2, or 3, 4, 5, 6, page 42).

## SECOND YEAR ARTS

The course of study in the Second Year in Arts is made up of five subjects, to be selected on the following plan (each subject, except History, representing four lecture hours per week or their equivalent, a laboratory period of either two or three hours to count as one lecture hour, and History being allotted three lecture hours per week):

1. English (Courses 13, 14, 15, 16, page 36).
2. History (Courses 3, 4, page 46).
3. A foreign language (already taken for Matriculation, and in the First Year), either Latin (Courses 5, 6, 7, 8, page 33); or Greek (Courses 7, 8, page 30); or French (Courses 7, 8, 9, 10, 11, 12, 13, 14, page 40); or German (Courses 7, 8, 9, 10, page 42).
4. Any *two* full subjects\* or their equivalent from the following list, subject to the time-table and other limitations below (the language already taken in 3 above being barred): Latin (Courses 5, 6, 7, 8, page 33); Greek (Courses 3, 4, or 5, 6, page 30); Biblical Greek (Courses 3, 4, page 32); French (Courses 7, 8, 9, 10, 11, 12, 13, 14, page 40); German (Courses 7, 8, 9, 10, page 42); Hebrew (Courses 3, 4, page 70); Icelandic (Courses 5, 6, 7, 8, page 42); Psychology and History of Philosophy (1921-22 Courses 1, 2, 1b, 2b, page 44); Economics (Courses 1, 2, page 48); Mathematics† (Courses 13, 16 page 51); Astronomy, half-subject only (Courses 91, 92, page 54); Physics (Courses 9, 10, and selected parts of 17, 18, 19, 20, page 57); Botany‡ half-subject only (Courses 1, 2, 3, 4, page 58); Geology‡ half subject only (Courses 1, 2, 3, 4, page 61); Chemistry † (Courses 1, 2, 21, 22, page 63); Zoology‡, half subject only (Courses 1, 2, 3, 4, page 68);

N.B.—The subjects of the above curriculum will be grouped for time-table purposes by the University Faculty as follows, the groups being kept clear of conflict with one another, but not necessarily the subjects within the groups: (a) English; (b) History; (c) Latin, Physics; (d) French, Hebrew, Icelandic; (e) German, Greek, Geology with Astronomy; (f) Economics, Chemistry; (g) Psychology and History of Philosophy, Botany with Zoology, Mathematics.

Students proceeding to the Latin Philosophy Course in St. Boniface College take a special Second Year Course outlined on pages 78-80.

\*A student who has not taken both Physics and Chemistry for Matriculation must elect one Science subject in either First or the Second Year.

†Mathematics is a prerequisite for Divisions A and B of the course in Natural and Physical Science.

‡See outline of the divisions of the Natural and Physical Science Course, for which these courses are prerequisites.

Chemistry will be permitted as an option only in case it has not been taken in the First Year.



## SECOND YEAR ARTS AND SCIENCE

### (Second Pre-Medical Year)

The course of study in the Second Pre-Medical Year is as follows:

1. English (Courses page 13, 14, 15, 16, page 36).
2. Physics (Courses 33, 34, page 57).
3. Chemistry (Courses 5, 6; 27, 28, page 63).
4. Zoology (Courses 9, 10, 11, 12, page 68).
5. One of Latin (Courses 5, 6, 7, 8, page 33).

French (Courses 13, 14, page 40).

German (Courses 7, 8, 9, 10, page 42).

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A candidate, in order to pass in any paper at the examination of the First or the Second Year, must have 50 per cent. of the marks in that paper, and to pass the whole examination and obtain a Second Class standing he must have 50 per cent. of the aggregate of the marks assigned and may not have failed on more than three full papers or their equivalent. If he fail to obtain 50 per cent. he shall be required to take the whole examination again, except in the subject or subjects where a mark of 60 per cent. or higher has been obtained. To obtain First Class Standing, grade B, he must have 67 per cent. of the aggregate of the marks assigned. To obtain First Class standing, grade A, he must have 80 per cent. of the aggregate of the marks assigned.

The standing of a candidate on an individual subject is determined on the same basis as his standing on the whole examination.

Candidates who have failures registered against them in not more than one full paper, or two half papers or their equivalent, in the examination of the First Year or the Second Year may, as conditioned students, proceed with their course, with a view to subsequently obtaining the full standing of the year; but all conditions from the examination of the First Year must be removed before the commencement of the Third Year, and all conditions from the examination of the Second Year must be removed before the commencement of the Fourth Year.

These regulations should be read in conjunction with the regulations relating to Supplemental Examinations. (See pages 87-89).

A student passing the examination of the First Year with First Class grade "B" or higher standing, may obtain from the Department of Education for Manitoba a First Class non-professional Teacher's Certificate. A student passing with Second Class standing may obtain a Second Class non-professional certificate. In each case the applicant for a certificate must satisfy the requirements of the Department in Bookkeeping, Agriculture, Music, Drawing, Botany and Geography.

### THIRD AND FOURTH YEARS

After completing the First and Second Years a student may proceed to the degree of Bachelor of Arts by pursuing any one of the following Courses, viz.:

(a) A General Course. All students who elect the General Course must take two subjects from Group A below and one subject from each of Groups B, C and D:

Group A—English, French, German, Latin, Greek, Hebrew.

Group B—Philosophy, Political Economy and History.

Group C—Physics, Chemistry, Biology, Astronomy with Geology.

Group D—An additional subject from Group A, an additional subject from Group B, an additional subject from Group C, Mathematics, Scripture.

(b) A Group Course, made up on the following plan\*: Any two *majors*, or a *major* and two *minors*†, from the following list—Classical Greek (major and minor), Biblical Greek (minor only), Latin (major and minor), Hebrew (major), English (major and minor), French (major and minor), German (major and minor), Philosophy (major and minor)‡, History (major and minor), Political Economy (major and minor), and Mathematics (major and minor)‡, Finance (minor in Fourth Year only), Sociology (minor only).

(c) A Course in Philosophy.

(d) A Course in Latin Philosophy.

(e) A Course in Mathematics and Physics.

(f) A Course in Natural and Physical Science.

(Any one of four divisions.)

	Third Year	Fourth Year
Division A	Mathematics Physics Chemistry Geology and Mineralogy	Mathematics Physics, and either Chemistry or Geology and Mineralogy.
Division B	Mathematics Physics Chemistry Astronomy	Mathematics Physics Astronomy
Division C	Physics Chemistry Any two of Botany, Geology and Mineralogy, Zoology	Physics Chemistry Any one of Botany, Geology and Mineralogy, Zoology.
Division D	Botany Zoology Geology and Mineralogy Chemistry	Botany Zoology Geology and Mineralogy

For details as to the content of the above courses consult the outlines

\*Owing to the numerous combinations of subjects allowed in the Third and Fourth Years under the system of group courses it is impossible in the present length of the teaching week to make provision for all such combinations. The University, therefore, while endeavoring to provide for all the various courses selected by students, will, in drawing up the time-table, have regard especially to the avoidance of conflicts between courses selected from the following groups:

(a) English, Latin, Greek, French, German, Hebrew; (b) English, History, Political Economy, Philosophy; (c) Natural and Physical Sciences, Mathematics, Political Economy.

†A student pursuing the work of a Group Course must in the Fourth Year continue the subjects begun in the Third Year, except that a student taking in the Third Year a major and two minors may, in the Fourth Year, for the two minors substitute a major in one of them. An exception to this rule is made in the case of the Finance Minor of the Fourth Year, which may be taken by any student who has taken in the Third Year a major or a minor in Political Economy or a major, minor or the full course in Mathematics and Physics.

‡In Philosophy additional work is provided that is the equivalent of a major, so that a full course may be taken in this subject.

Additional work is provided by the Department of Mathematics and Astronomy which together with certain courses given by the Physics Department are equivalent to a major, so that a full course may be taken in Mathematics and Physics. See pages 55 and 57.

given under the various departmental captions, following the indication as to pages given below.

Subjects	Courses into Which They Enter	Pages
Classical Greek.....	Major, Minor, General.....	30
Biblical Greek.....	Minor.....	32
Latin.....	Major, Minor, General.....	33-34
Hebrew.....	Major, General.....	70-72
English.....	Major, Minor, General.....	35-38
French.....	Major, Minor, General.....	39-41
German.....	Major, Minor, General.....	42-43
Philosophy.....	Full Course, Major, Minor, General.....	44-45
Latin Philosophy.....	Full Course, General.....	74-78
History.....	Major, Minor, General.....	46-47
Political Economy.....	Major, Minor, General, Finance Minor.....	48-50
Mathematics.....	Full Course, Major, Minor, General, Finance Minor, Natural and Physical Science, Divisions A and B.....	51-54
Finance.....	Minor.....	50 & 55
Sociology.....	Minor.....	73
Physics.....	Mathematics and Physics Course, Natural and Physical Science, Divisions A, B, C and General Course.....	56-57
Botany.....	Natural and Physical Science, Divisions C, D, General.....	58-59
Geology and Mineralogy.....	Natural and Physical Science, Divisions A, C and D, General.....	60-62
Chemistry.....	Natural and Physical Science, Divisions A, B, C, D, General.....	63-64
Zoology.....	Natural and Physical Science, Divisions C and D, General.....	68-69

N.B.—A new group course has been recently established and is announced in detail in the Agricultural and Home Economics Calendar. It consists of a major or two minors, chosen from the following: Latin, Greek, English, French, German, Philosophy, History, and Political Economy, together with a major in Home Economics. Certain pre-requisite First and Second Year studies are prescribed.

## I—MASTER OF ARTS

The following are the requirements for the Degree of Master of Art, (M.A.):

1. A candidate for the degree of Master of Arts shall hold the degree of Bachelor of Arts from the University of Manitoba or an equivalent degree from this or another recognized University.

2. Two subjects, not necessarily in different departments, shall be taken. One of these shall be designated at the major subject and special attention shall be devoted to it. It shall be a subject which the student has already pursued in the Third and Fourth Years of his undergraduate course. The minor subject shall be selected from a group related to the major subject. Not more than one-third of the student's time should be devoted to the minor subject.

3. The student shall submit a satisfactory thesis on some topic connected with his major subject.

4. The student shall pursue his work under the direction of two or more instructors of whom at least one shall be a member of the University Faculty. Recommendations with regard to Major and Minor courses and subject of thesis shall be drawn up by the departments immediately concerned after consultation with the candidate and such recommendation shall be submitted for final approval to the standing committee of the General Faculty Council on Post-Graduate Studies.

5. The minimum period spent in study for the M.A. degree shall be one academic year for students giving their whole time to the work. The minimum period for students not giving their whole time to M.A. work shall be two academic years, except in the case of students who attend a summer session in graduate work at some institution, acceptable to the Departments concerned, when the minimum time may be reduced to one year on recommendation of those Departments. Students required to take two years for this degree must receive standing on at least one-third of their work for the degree before entering upon their final year. The library conditions under which extra-mural students pursue their work shall be satisfactory to the Departments concerned.

6. The committee which shall pass upon the merits of the thesis shall consist of the instructors under whose direction the candidate's work has been performed, and at least one other recommended by the Committee on Post-Graduate Studies. The candidate shall pass such written examinations at such times and under such conditions as the committee may decide, and also undergo a final oral examination and public defence of the thesis, conducted by the committee.

7. The thesis shall be submitted at least ten days before the time of the oral examination. At least four printed or typewritten copies are required, three of which shall be deposited in the Library. It is desirable that uniformity in style, format, etc., be observed and in reference to these matters the candidate should consult the secretary of the Committee on Post-Graduate Studies.

For the present the course of study in any department for the M.A. degree will in the main be outlined on request by the instructors in that department, and adapted to suit the needs, capabilities and previous training of the applicant. Application for formal registration should be made to the Secretary of the Committee on Post-Graduate Studies. A limited number of M.A. courses are prepared in advance, and these are listed along with the undergraduate courses of the same department elsewhere in this Calendar.

## CURRICULA IN SCIENCE

The University of Manitoba confers two degrees in Science, viz., Bachelor of Science (B.Sc.) and Master of Science (M.Sc.). The following are the requisites for proceeding in course to admission to these degrees:

### I.—BACHELOR OF SCIENCE

#### Matriculation

The requirements for Matriculation for Science are set forth in detail in the Matriculation Calendar.

#### Undergraduate Course in Science

After having matriculated, the student of Science is required to pass four examinations before being admitted to the degree of Bachelor of Science, viz., the First, the Second, the Third, and the Fourth Year Examinations.

#### FIRST YEAR

Course Nos.	Page	SUBJECT	Fall Term		Spring Term	
			Lecture Hours per week	Lab. Hours per week	Lecture Hours per week	Lab. Hours per week
1, 2; 3, 4	35	English.....	4		4	
1, 4; 5, 6	51	Mathematics.....	6		6	
1, 2; 3, 4	56	Physics.....	3	2	3	2
1, 2; 21, 22; 25, 26	63-64	Chemistry.....	3(+1)	6	3(+1)	6
		One of—				
5, 6	39	French.....	3		3	
1, 2 or 3, 4; 5, 6	42	German.....	3		3	

#### SECOND YEAR

9, 10; 17, 18	56	Physics.....	3	3	3	3
3, 4; 25, 26	63-64	Chemistry.....	3	6	3	6
7, 10, 13, 16	51	Mathematics I.....	6		6	
		Or two of—				
1, 2; 3, 4	68	Zoology.....	2	2	2	2
1, 2; 7, 8	58	Botany.....	2	2	2	2
1, 2; 7, 8	60	Geology.....	2	2	2	2
7, 16	51	Mathematics II.....	2		4	

#### THIRD YEAR

Course Nos.	Page	SUBJECT	Fall Term		Spring Term	
			Lecture Hours per week	Lab. Hours per week	Lecture Hours per week	Lab. Hours per week
		Any three of—				
29, 30, 55, 56	52	Mathematics.....	5		5	
31, 54, 91, 92, 93, 96	54	Astronomy.....	6	1	5	1
27, 28; 19, 20	57	Physics.....	3	3	3	3
7, 8; 11, 12, 33, 34	63-64	Chemistry.....	4	9	4	9
9, 10; 11, 12; 14	59	Botany.....	3	5	4	5
17, 18; 19, 20; 21; 22; 24	68-69	Zoology.....	4	6	4	6
11, 12; 13, 14, 19, 20; 22	61	Geology.....	5	2	4	5
9, 10; 13	66	[Physiology and ].....	3		3	
1, 2, 5, 6	65	[Biochemistry.....]		6		6

Note—In Third Year Science, Physiology and Biochemistry together constitute one subject.

## FOURTH YEAR

Students of the Fourth Year in Science will take two subjects selected from one of the following groups:

- A.—Mathematics, Physics, Chemistry, Geology.
- B.—Botany, Zoology, Geology, Chemistry.
- C.—Zoology, Physiology, Biochemistry, Anatomy.
- D.—Physiology, or Biochemistry, or Botany, or Physics.

The two subjects taken must have been taken already in the Third Year.

Course Nos.	Page	SUBJECT	Fall Term	Lab.	Spring Term	Lab.
			Lecture Hours per week	Hours per week	Lecture Hours per week	Hours per week
39, 40, 61, 62*	52-53	Mathematics.....				
29, 30; 25, 26; 31, 32	57	Physics.....	4	8	4	8
19, 20 and two of 13, 14; 15, 16; 17, 18 and 35, 36; and one of 37, 38;						
39, 40	63-64	Chemistry.....	5	11	5	11
15, 16; 17, 18	59	Botany.....	4	9	4	9
17, 18; 19, 20; 21, 22; 24;	69	Zoology.....	3	6	3	8
15, 16; 17, 18; 11, 12, 14 19, 20 and 3, 4, 7, 8 in Biochem- istry	61	Geology.....	4	11	4	11
3, 4, 7, 8, 9, 10 and 11, 12, 14 in Physiology and 11, 12, 14	66	Physiology (See Note 1)....	2	13	2	13
	65	Biochemistry (See Note 1)....	2	13	2	13

*Note 1*—Students electing Physiology in the Fourth Year must take the courses in Biochemistry in Third Year Medicine as part of their course in Physiology.

Students electing Biochemistry in the Fourth Year must take the courses in Physiology in Third Year Medicine as part of their course in Biochemistry.

Students electing both Physiology and Biochemistry in the Fourth Year must spend extra time in these subjects equivalent to the courses common to the two subjects.

*Note 2*—The courses in Physiology and Biochemistry will be altered in 1923-24 to conform with the new course in Medicine.

Students electing Physiology and Biochemistry in the Third Year are required to take in addition a short course in Histology and Practical Histology.

### COMBINED DEGREE OF B.Sc.-M.D.

A combined degree of B.Sc.-M.D. has been instituted, and the course of study for this degree is as follows:

First Year: As for the First Year Science.

Second Year: Physics, Chemistry, Zoology and Botany as for the present Second Year Science course.

Third Year:

- (a) Anatomy, including Histology.
- (b) Physiology and Biochemistry: both (a) and (b) as for First Year Medical Course.
- (c) Zoology—a short course probably with Science students.

Fourth Year:

- (a) Anatomy—special reading, special dissection, special conferences
- (b) Zoology—further courses including work with senior Science students, and
- (c) either (1) Physiology—special course probably with Fourth Year Science, or  
(2) Biochemistry (including a course in Physical Chemistry) a special course, probably with Fourth Year Science.

The Fifth, Sixth, Seventh and Eighth Years of this combined course will be identical with the Second, Third, Fourth and Fifth Years of the new Medical course.

**Registration:** Those desiring to complete this combined course shall be required to register as Medical students at the beginning of their Third Year.

The combined degree shall be awarded on the satisfactory completion of the entire course and only under exceptional circumstances shall the B.Sc. degree be awarded before this time.

In the last six years of this course the same regulations governing conditions as for the ordinary Medical course shall apply.



## II—MASTER OF SCIENCE

The following are the requirements for the Degree of Master of Science (M.Sc.):

1. The candidate for the degree of Master of Science:

(a) Shall hold the degree of B.Sc. of the University of Manitoba or possess such qualifications as the Committee on Post-Graduate Studies of the General Faculty Council after reference to the Science Committee of the University Faculty of Arts and Science may deem to be the equivalent of this degree.

(b) Shall pass an examination in two courses of study, one closely related to the subject of his thesis and the other in an allied subject, and all his work shall be done under the direction of at least two members of the University Faculty of Arts and Science. The thesis and main course of study shall be taken in a department in which the student has studied during the Third and Fourth Years of his undergraduate course; the other may be taken in the same or an allied department.

(c) Shall submit a satisfactory thesis based upon original work done under the direction of the department in which he has elected to do his research.

(d) Shall have completed at least one year's graduate work in one or more of the following departments of the University of Manitoba: Mathematics, Physics, Chemistry, Geology, Botany, Zoology, Physiology, Bio-Chemistry, Anatomy.

A graduate of this University may be permitted to meet the requirements of this clause by courses of study taken in another University if such work be approved by the Committee on Post-Graduate Studies after reference to the Science Committee of the University Faculty of Arts and Science.

2. (a) The candidate shall make written application to the secretary of the Committee on Post-Graduate Studies for permission to enter on a course leading to this degree. The outline of this course, drawn up in consultation with the departments concerned, must receive the approval of the Committee.

(b) The nature of the thesis shall subsequently receive the approval of the Committee on Post-Graduate Studies after reference to the Science Committee of the University Faculty of Arts and Science.

3. For the examination of each candidate the examining board shall consist of the instructors under whose direction the work has been performed and one other recommended by the Committee on Post-Graduate Studies.

4. The thesis in its final form shall be submitted not later than the 25th of April in any year to ensure the conferring of the degree at the Annual Convocation of that year. At least four printed or typewritten copies of the thesis shall be submitted by the candidate. One of these shall subsequently be deposited in the University Library. It is desirable that uniformity in style, format, etc., be observed and in reference to these matters the candidate should consult the Secretary of the Committee on Post-Graduate Studies.

## Courses in Arts and Science in Detail

### DEPARTMENT OF CLASSICS

F. W. Clark, B.A., Ph.D.....	<i>Professor of Latin and Greek</i>
Very Rev. G. F. Coombes, M.A., D.D.....	<i>Professor of Latin and Greek</i>
J. W. Taylor, M.A., Ph.D.....	<i>Assistant Professor of Greek and Latin</i>
W. M. Hugill, B.A.....	<i>Assistant Professor of Greek and Latin</i>

N.B.—For key to system of numbering courses, see page 4.

### CLASSICAL GREEK

**1. Beginner's Greek Course.** This course is intended for students who have not had the opportunity of taking Greek for Matriculation. The purpose is to prepare students as rapidly as possible for the reading of Greek. Gleason's Greek Primer (American Book Co.), Lessons I-XXXV. Four hours a week.

**2. Beginner's Greek Course.** Continuation of Course 1. Gleason's Greek Primer, Lessons LVIII-LXI, LXIV, LXVIII, LXIX, LXXI, LXXII, and Colson's Greek Reader (Macmillan Co.), selections from Parts I-IV. Four hours a week.

**3. Greek Authors.** Colson's Greek Reader, (Macmillan Co.), Part VIII will be read. Easy sight translation. Four hours a week.

**4. Euripides.** Continuation of Course 3. *The Hecuba*, (Bond and Walpole, Macmillan Elementary Classics), will be studied. The choral odes will be read in translation. Easy sight translation. Four hours a week.

**5. Plato.** *Apology* and *Crito*. (Dyer-Seymour, Ginn & Co.). Easy sight translation. Four hours a week.

**6. Homer.** *Iliad*; selections from first three books. (Sterrett, American Book Co.). Easy sight translation. Four hours a week.

**7. Xenophon.** *Hellenica*, Books I and II (Brownson, American Book Co.). Special topics for study on which lectures will be given: Xenophon's career: his place among the Greek historians: the scope and content of his writings. Two hours a week.

Private Reading for Fourth Year only, Book V. 1-4, 23 (as in prescribed text).

**8. Aristophanes.** *Birds* (Merry, Oxford Press). Study of the origin, structure and content of the Old Attic Comedy. Books valuable for reference: Moulton, Ancient Classical Drama; Haigh, Attic Theatre. Two hours a week. (Not given in 1922-23).

9a. **Homer.** *Odyssey* (Not given in 1922-23).

9b. **Homer.** *Iliad* VI, XXII, XXIV. Sight translation. Special topics for study on which lectures will be given: The Homeric problem; chief characteristics of Homeric poetry; character description in Homer. Three hours a week.

Private reading for Fourth Year only, Book IX.

10a. **Plato.** *Republic* I-IV, omitting I, 6-9, 13-15, 20-24; II, 17-21 and III, 1-11. Emphasis will be laid on the ethical and political content and

its application to modern social and political problems. Sight translation. Three hours a week. (Not given in 1922-23.)

10b. **Selections in Prose.** Text: *Flosculi Graeci* (Poynton, Oxford Press). Third Year will omit 1b, 4c, 5c, 7, 8, 11 b, 12, 13, 15, 16a, 17, 19, 23a and c, 25a, 26, 29, 31b and c. Fourth Year will omit the extracts just mentioned with the exception of those italicised which are to be read privately. Sight translation. Three hours a week.

11. **Thucydides.** *Peloponnesian War*, VII (Marchant, Macmillan Co.). Special attention will be given to the historical and literary value of the work. Two hours a week. (Not given in 1922-23).

12. **Greek Tragedy.** Sophocles, *Oedipus Tyrannus*. The choral odes will be read in translation. History of Greek Tragedy and comparative study of the three great tragedians. Two hours a week.

Private Reading for Fourth Year only, Aristotle, *Poetics* cc. 6-11 and 13-18.

13. **Greek History.** Bury's *History of Greece*, chapters IV (p. 180) to IX. Lectures and readings on the period from 500 B.C. to 431 B.C. The Persian Wars, the development of the democracy in Athens and the growth of the Athenian Empire. Special topics and papers will be assigned. One hour a week. (Not given in 1922-23).

14. **Greek History.** Continuation of 13, involving a study of Bury's *History of Greece*, chapters X to XVII, omitting XV. Lectures and readings on the period from 431 B.C. to 338 B.C. The Peloponnesian war, the Spartan and Theban hegemonies, the rise of Philip of Macedon and the campaigns of Alexander. Special topics and papers will be assigned. One hour a week. (Not given in 1922-23).

15. **Greek Antiquities.** The public buildings of Athens will be studied from descriptions and illustrations of their remains. This will be made the starting point for a broader consideration of Greek architecture and art. Assigned readings and reports. One hour a week.

16. **Greek Antiquities.** Continuation of 15, involving a study of the private life, education and religion of the Greeks and their national games. Assigned readings and reports. One hour a week.

17. **Greek Poetry in Translation.** The following works will be studied: Aeschylus—*Choephoroi* (Tucker), *Prometheus Bound* (Golden Treasury Series).

Sophocles—*Electra*, *Antigone* (Jebb).

Euripides—*Electra* (Murray), *Bacchae* (Way).

Aristophanes—*The Frogs* (Rogers).

Bucolic Poets—Theocritus, *Idylls* 1, 2, 7, 15, and *Epigrams* 1-24; Moschus, *Europa*. (Edmonds in Loeb Library).

Greek Anthology—Selections. (Paton in Loeb Library.)

One hour a week.

18. **Greek Prose Authors in Translation.** The following works will be studied: Thucydides, *Peloponnesian War*, I, II, 34-54, V, 84-116 (Jowett). Demosthenes, *On the Crown*, *The Olynthiacs* (Kennedy). Plato, *Phaedo*, *Crito*, *Republic* V, X (Jowett). Aristotle, *Politics* II, IV, V (Welldon); *Ethics* I, II (Williams); *Poetics* (Cooper). Theophrastus, *Characters* (Jebb). Lucian, *The Dream*, *Timon*, *A True Story* (Harmon in Loeb Library). Plutarch, *Morals*, vol. I. The account of the Laws and customs of the Spartans (Goodwin). One hour a week.

19. **Thucydides.**

20. **Greek Philosophy.**

- Pre-Engineering Year: Courses 1, 2.  
 First Pre-Medical Year: Courses 1, 2.  
 First Year, Arts: Courses 1, 2.  
 First Year, Arts: (For students who have matriculation standing in Greek)—Courses 3, 4.  
 Second Year, Arts: Courses 3, 4 or 5, 6.  
 Third Year, Arts: Major: Courses 7, 9b, 10b, 12, 15, 16, 17, 18.  
 Minor: Courses 9b, 10b, with *either* 15, 16 or 17, 18.  
 General: Courses 9b, 10b.  
 Fourth Year, Arts: Major: Courses 7, 9b, 10b, 12, 15, 16, 17, 18.  
 Minor: Courses 9b, 10b, with *either* 15, 16 or 17, 18.  
 General: Courses 9b, 10b.  
 Graduate Courses: 19, 20.

## BIBLICAL GREEK

(Courses 1, 2, 3, 4, 7, 8, 11, 12 are given only in the affiliated Colleges).

**1, 2. Biblical Greek I.** Moulton's First Greek Reader in New Testament Greek will be covered together with the corresponding sections of Moulton's Introduction to New Testament Greek. First term: Moulton's Introduction, Exercises 1 to 27; Second term: Moulton's Introduction completed. Four hours a week.

**3, 4. Biblical Greek II.** The Book of Acts will be read and training in continuous Greek composition will be given, based on the text read, and with reference to Burton's New Testament Moods and Tenses. Exercises in sight translation of simple Hellenistic Greek will be given from time to time. First term: Acts 1-14. Second Term: Acts 15-28. Four hours a week.

5. **Synoptic Gospels.** The course will consist of the reading of the Synoptic Gospels in Greek with brief introductory and explanatory notes. Three hours a week.

6. **Pauline Epistles and Apocrypha.** Reading of Romans, Corinthians 1 and 2, Thessalonians 1 and 2, Judith and the Wisdom of Solomon, with brief introductory and explanatory notes. \*Three hours a week.

7. **History of New Testament Times.** The period covered is 165 B.C. to 135 A.D. The prescribed text is W. D. Morrison's *The Jews under the Roman Empire* (Stories of the Nations). One hour a week.

8. **Pauline Epistles and Apocrypha.** A course complementary to Course 6. Lectures and reading on the "Introduction" to books read in Course 6. Case, Environment of Early Christianity and Charles, *Between the Old and New Testaments*, will form the basis of study. One hour a week.

9. **New Testament Epistles and Patristics.** Reading of Philippians, Philemon and Hebrews; also Justin Martyr's Apologies 1. The edition of the latter by Gildersleeve (American Book Co.) is recommended. Three hours a week. (Not for 1922-23.)

10. **New Testament Epistles and Apocrypha.** Reading of Timothy 1 and 2; James; Peter 1; and John 1, 2 and 3; also of Ecclesiasticus (The Wisdom of Jesus the Son of Sirach). Three hours a week. (Not for 1922-23.)

11. **Primitive Christianity.** Harnack's *Mission and Expansion of Christianity*, Vol. 1 (Putnam), will form the basis of study. Lectures and reading. One hour a week. (Not for 1922-23.)

12. **The Graeco-Roman World.** Cumont's *Oriental Religions in Roman Paganism* (Open Court, Chicago), will form the basis of study. Lectures and reading. One hour a week. (Not for 1922-23.)

First Year, Arts: Courses 1, 2.  
 Second Year, Arts: Courses 3, 4.  
 Third Year, Arts: Minor: Courses 5, 6, 7, 8.  
 Fourth Year, Arts: Minor: Courses 5, 6, 7, 8.

Courses 1 and 2 (and consequently also 3 and 4) are open only to such students as have not taken Greek for Matriculation.

Nestle's New Testament in Greek and the British and Foreign Bible Society's Old Testament in Greek are convenient text which can be easily secured. Where annotated texts are desired, the editions of the books read in the Cambridge Bible in Greek will be found useful.

## LATIN

1. **Prose Composition.** Bradley-Arnold Latin Composition. Exercises 1-12, omitting 4. One hour a week.

2. **Prose Composition.** Bradley-Arnold continued. Exercises 14-24, omitting 19. One hour a week.

3. **Prose Authors and Sight Translation.** Text: A Latin Reader, by A. Petrie (Oxford Press). Selections 11-15 and 32-38 will be studied. Three hours a week.

4. **Verse and Sight Translation.** Text: A Latin Reader, by A. Petrie (Oxford Press). Study of the following selections from Virgil and Ovid: 91-100, 102, 103, 124, 125, 129-131, 139. Three hours a week.

5. **Prose Composition.** Bradley-Arnold Latin Composition. Exercises 41-55, omitting 43, 44, 47, 48, 51. One hour a week.

6. **Prose Composition.** A continuation of Course 5. Exercises 56-65, omitting 62. One hour a week.

7. **Prose Authors and Sight Translation.** Text: A Latin Reader, by A. Petrie (Oxford Press). Study of the following selections from Sallust, Livy and Pliny: 46, 49-66, 68, 69, 71, 72. Three hours a week.

8. **Verse Authors and Sight Translation.** (a) Selections from Catullus and Horace as found in Petrie's Latin Reader (Oxford Press). (b) Selected Epigrams from Martial by Post (Ginn & Co.). The following epigrams amounting to about 450 lines will be read. Book I: 3, 9, 10, 13, 16, 29, 32, 33, 47, 75, 79, 98. Book II: 5, 11, 16, 41, 69, 80, 88, 90. Book III: 12, 14, 15, 35, 38, 44, 52, 63. Book IV: 15, 41, 44. Book V: 8, 9, 29, 34, 43, 47, 49, 56, 58. Book VI: 8, 17, 28, 48. Book VII: 3, 83, 92. Book VIII: 9, 10, 12, 17, 69, 76. Book IX: 10, 15, 46, 68, 81, 97. Book X: 39, 47, 61, 62, 74, 96, 104. Book XI: 35, 84. Three hours a week.

9, 10. **Prose Composition and Sight Translation.** Translation into Latin of representative passages from English authors. Practice in sight translation. One hour a week.

11. **Roman Elegiac Poetry.** (a) Select Poems of Catullus by Simpson (Macmillan), Nos. 1, 2, 4, 7, 9, 11, 13, 14, 22, 30, 34, 38, 43, 45, 50, 51, 52, 53, 61, 62, 64, 65, 72, 75, 83, 84, 85, 86, 87, 92, 96, 107, 109. (b) Roman Elegiac Poets by Harrington (American Book Co.). Tibullus: I, 1, 3, 10; II, 1, 2, 5. Propertius: I, 1, 2, 8, 8b, 22; II, 10, 11, 12, 13, 31; III, 1, 3, 7, 9; IV, 6, 11. Ovid, Amores: I, 1, 3, 15; II, 6, 16; III, 9, 15. Two hours a week.

12. **Caesar.** Study of the career of Caesar, with the reading of *Bellum Gallicum*, Book V, 1-23; Book VI, 13-28; Book VII, 1-31; 57-90; and of *Bellum Civile*, Book III, 1-33; 58-75; 82-112. For reference, Warde Fowler's *Caesar* (Heroes of the Nations Series; G. P. Putnam's Sons). Two hours a week.

13. **Cicero, Pliny and Erasmus.** (a) Cicero: Selected Letters (Abbott, Ginn & Co.) Nos. 1, 7, 8, 11, 14, 20, 21, 26, 27, 33, 37, 39, 41, 44, 49, 60, 63, 73, 74, 75, 76, 86, 91, 95. (b) Pliny: Selected Letters (Allen, Oxford Press). Epistles I: 13, 15; II: 6, 20; III: 16, 21; IV: 13, 19; VII: 9; VIII: 16; IX: 23; X: 33, 34, 96, 97. (c) Erasmus: Selections (Allen, Oxford Press) Nos. 3, 5, 6, 8, 20, 26, 27. Special topics for study on which lectures will be given: Roman letter-writing; the value of Cicero's correspondence; Cicero's private life; Roman life as depicted by Pliny. Three hours a week.

14. **Horace.** (a) Odes I, 1-4, 9-12, 14, 18, 21, 22, 24, 34, 37, 38; II, 1-3, 10, 13-17; III, 1, 2, 5, 6, 8, 9, 13, 14, 18, 21, 23, 29, 30; IV, 3, 5, 7, 15. (b) Satires I, 1, 5, 9. (c) Epistles I, 1, 2, 6, 7, 10, 11, 13, 14, 20. Special topics for study on which lectures will be given: Horace's lyrical poetry; the poet's philosophy of life; the country of Horace. Three hours a week.

15. **Lucretius.** *De Rerum Natura*, Book I, 1-634; III, 1-349 and 830 to the end; V, 1-431 and 728 to end. Study of the philosophy and literary art of Lucretius. Two hours a week.

16. **Tacitus.** The *Agricola* (Stuart, The Macmillan Co.) and the following selections from the *Annals*: XIII, 1-24; XIV, 1-59; XV, 33-74 (Furneaux and Pitman, Oxford Press). Special topics for study on which lectures will be given: Tacitus' literary style; his method and importance as an historian; the scope and content of his writings. Two hours a week. For private reading: *Annals* XIII, 6-10; XIV, 40-59; XV, 33-37.

17. **Cicero.** Orations—*Pro Lege Manilia* (Nicol, Cambridge Press) and *Pro Milone* (Reid, Cambridge Press). Lectures on Roman oratory. Three hours a week. For private reading: *In Catilinam* IV (Upcott, Oxford Press).

18. **Virgil.** *Aeneid*, II, IV, VI (Sidgwick, Cambridge Press). Special topics for study on which lectures will be given: The Georgics; Virgilian metre; the Aeneid as the epic of Rome; Virgil's influence on English poetry. Three hours a week. For private reading: Eclogues 1, 4, 7, 8, 9.

19. **Roman Antiquities.** Course of lectures, illustrated by lantern slides, particularly on Roman Private Life. The topics discussed will in the main be those treated in Fowler's *Social Life at Rome in the Days of Cicero* and in Tucker's *Life in the Roman World of Nero and St. Paul*. Other books valuable for reference are: Johnston, *Private Life of the Romans*; Jones, *Companion to Roman History*; Friedlaender-Freese, *Roman Life and Manners under the Early Empire*; Sandy's *Companion to Latin Studies*; Platner, *Ancient Rome*. One hour a week. (Not given in 1922-23.)

20. **Latin Literature.** A course designed to give students a general view of Latin Literature. Particular stress will be laid on authors which are not studied in the regular reading courses. Representative selections will be read in the best English translations. One hour a week. (Not given in 1922-23.)

21, 22. **Roman History.** A study of the period from 133 B.C. to 37 A.D. Pelham: *Outlines of Roman History* will serve as the basis for the course. Study of special topics in Mommsen; Taylor, *Constitutional and Political History of Rome*; Capes, *Early Roman Empire*; Shuckburgh, *Life of Augustus*. At least four essays each term will be required. One hour a week.

23. **Virgil.** Eclogues, Georgics, Aeneid.

24. **Tacitus.** *Annals* I-VI.

25, 26. **Latin Prose.**

- Pre-Engineering Year: Courses 1, 2, 3, 4.  
 First Pre-Medical Year: Courses 1, 2, 3, 4.  
 First Year, Arts: Courses 1, 2, 3, 4.  
 Second Year, Arts: Courses 5, 6, 7, 8.  
 Third Year, Arts: Major: Courses 9, 10, 11, 12, 13, 14, 21, 22.  
                           Minor: Courses 13, 14, with *either* 9 and 10 *or* 21, 22.  
                           General: Courses 13, 14.  
 Fourth Year, Arts: Major: Courses 9, 10, 15, 16, 17, 18, 21, 22.  
                           Minor: Courses 17, 18, with *either* 9 and 10 *or* 21, 22.  
                           General: Courses 17, 18.  
 Graduate Courses, 23, 24, 25, 26.

### DEPARTMENT OF ENGLISH

A. W. Crawford, M.A., Ph.D.	Professor
Aaron J. Perry, M.A.	Assistant Professor
W. T. Allison, M.A., Ph.D.	Assistant Professor
	Assistant Professor
	Lecturer

N.B.—For key to system of numbering courses, see page 4.

†1, 2. **English Composition.** Text: The Essentials of English Composition, and Illustrative Examples of English Composition, by James W. Linn (Scribner's). The course is designed especially for students in Pre-Engineering and Pre-Medical Courses. Short themes will be required of all students throughout the year, and longer themes at the discretion of the instructor. (1) First Term: Essentials, Part I, with Examples. (2) Second Term: Essentials, Part II, with Examples. Two hours a week.

3, 4. **English Literature.** A study of leading English poets and prose writers. Text: English Poetry, its Principles and Progress, edited by Gayley and Young (Macmillan). (1) First Term: (a) English Poetry, Cavalier Lyrists to Burns (inclusive); (b) Shakespeare's Twelfth Night; (c) Bunyan's Pilgrim's Progress, Part 1. (Macmillan's Pocket Classics); (d) Goldsmith's The Vicar of Wakefield (Macmillan's Pocket Classics). (2) Second Term: (a) English Poetry, Wordsworth to Arnold (inclusive); (b) Lamb's Essays of Elia (Everyman's Library); (c) Scott's Ivanhoe (Everyman); (d) Stevenson's Travels With a Donkey, etc., (Macmillan's Pocket Classics). Two hours a week.

5, 6. **English Composition.** Text: (a) Theory and Practice of Technical Writing, by Samuel Earle (Macmillan). This course is designed for students of the first year Engineering Course. Short themes will be required of all students throughout the year, and longer themes at the discretion of the instructor. First Term, Part I; Second Term, Part II. (b) Readings and discussions based on Addresses to Engineering Students, by Waddell and Harrington. Pub. Waddell & Harrington, Kansas City, Missouri. One hour a week. Assistant Professor Perry.

7, 8. **English Literature.** (1) First Term: (a) Shakespeare's The Merchant of Venice (Tudor Shakespeare, Macmillan). (b) Scott's Kenilworth (Everyman's Library). (c) Tennyson's The Coming of Arthur, Gareth and Lynette (Macmillan's Pocket Classics). (2) Second Term: (a)

†See note under courses 9, 10.



Shakespeare's *Hamlet* (Tudor Shakespeare, Macmillan) (b) Stevenson's *The Master of Ballantrae* (Macmillan's Pocket Classics). (c) Tennyson's *Lancelot and Elaine*, *Guinevere* (Macmillan's Pocket Classics). First Year Engineering Course. One hour a week. *Assistant Professor Perry*.

**9, 10. English Composition.** Text: *The Essentials of English Composition*, and *Illustrative Examples of English Composition*, by James W. Linn (Scribner's). A study of the principles and practice of English composition. The writing of numerous original compositions during the year. Study of selections from modern prose writers, under the direction of the instructor. (1) First Term: *Essentials*, Part I, with Examples. (2) Second Term: *Essentials*, Part II, with Examples. Two hours a week.

(Note—In Courses 1, 2, 9, 10, 13, 14, a maximum of twenty marks will be allowed for the class work of each term, including essays. This work will be examined by the instructor. A maximum of thirty marks will be allowed for the final examination paper for each term. The marks for term work will not be counted in determining the award of scholarships).

**11, 12. English Literature.** Texts: *History of English Literature*, by W. J. Long (Ginn & Co.); *English Poetry, its Principles and Progress*, edited by Gayley and Young (Macmillan).

(1) First Term: (a) *History*—Chapters VII-IX. (b) *English Poetry*—*Cavalier Lyrists* to Burns (inclusive). (c) *Prose*—Bunyan's *Pilgrim's Progress*, Part I; Addison and Steele's *The De Coverley Papers* (King's Treasuries, Dent).

(2) Second Term: (a) *History*—Chapters X-XI. (b) *English Poetry*—Wordsworth to Arnold (inclusive). (c) *Prose*—Lamb's *Essays of Elia* (Everyman's Library; Ruskin's *Sesame and Lilies* (King's Treasuries, Dent). Two hours a week. *Professor Crawford*.

**13, 14. English Prose.** Text: *Modern English Prose*, edited by Carpenter and Brewster (Macmillan). A study of numerous examples of modern English prose, with practice in writing.

(1) First Term: (a) *Modern English Prose*, pages 1-214, Study and Practice, chiefly in Description and Narration (b) Stevenson's "*Virginibus Puerisque*" (Scribner's Modern Students' Library).

(2) Second Term: (a) *Modern English Prose*, pages 215-463, Study and Practice chiefly in Exposition and Argument. (b) Charles Reade's "*Never Too Late to Mend*." *Assistant Professor Allison*.

**15, 16. English Literature.** (1) First Term: (a) *Poetry*—Keats's *The Eve of St. Agnes*; Tennyson's *The Coming of Arthur*, *Gareth and Lynette*, *Lancelot and Elaine*, *The Last Tournament*, *The Passing of Arthur*; Lowell's *The Vision of Sir Launfal*; Arnold's *Sohrab and Rustum* (Macmillan's Pocket Classics). (b) *Prose*—Scott's *Quentin Durward* (Everyman's Library); Hardy's *Far from the Madding Crowd* (Cornell Series).

(2) Second Term: (a) Chaucer's *Prologue to the Canterbury Tales*. Text: *Selections from Chaucer*, edited by Greenlaw (Chicago, Scott, Foresman, & Co.). (b) Shakespeare's *Romeo and Juliet*, *Coriolanus* (Tudor Shakespeare, Macmillan). Two hours a week. *Professor Crawford and Assistant Professor Perry*.

Note—These courses include a knowledge of the life and times of the authors read, from Long and other sources, and an ability to render Chaucer into modern English prose.

17. **Chaucer.** The Canterbury Tales: The Prologue, The Knight's Tale, The Tale of the Man of Lawe, The Nonne Preestes Tale, The Pardoner's Tale, The Second Nonnes Tale. Texts: Selections from Chaucer, edited by E. A. Greenlaw (Scott, Foresman & Co.); Chaucer, The Tale of the Man of Lawe, etc., edited by W. W. Skeat (Clarendon Press); Chaucer, by A. W. Ward (English Men of Letters). Two hours a week. *Assistant Professor Perry.*

18. **Middle English.** Langland's Piers the Plowman: Prologue and Passus I-VII, edited by W. W. Skeat (Clarendon Press); Translation of The Pearl, and Sir Gawain and The Green Knight, in Romance, Vision, and Satire, edited by Jessie L. Weston (Houghton, Mifflin & Co.); Translation of The Owl and the Nightingale, in The Chief Middle English Poets, edited by Jessie L. Weston (Houghton, Mifflin & Co.). Reference: Baldwin's Introduction to Medieval Literature (Scribner's).

(Note—Miss Weston's books need not be bought by students. The translation may be read in the Library.) *Assistant Professor Perry.*

19. **Spenser and Milton.** (a) Spenser: Faerie Queen, Book I. Text: Edited by Kitchin (Clarendon). Church: Spenser (English Men of Letters). (b) Milton: Comus; Areopagitica; Sonnets; Paradise Lost, Books I, II, III, IV; Samson Agonistes; Pattison: Milton (English Men of Letters). Three hours a week. *Assistant Professor Allison.*

20. **Eighteenth Century Literature.** (a) Prose—Swift: Gulliver's Travels (Macmillan's Pocket Classics); Addison and Steele: The Sir Roger de Coverley Papers (Macmillan's Pocket Classics); Goldsmith: She Stoops to Conquer (Macmillan's Pocket Classics); Boswell's Life of Johnson, abridged and edited by C. G. Osgood (Scribner's Modern Students' Library). (b) Ballads—Old English Ballads, edited by Arnes (Macmillan's Pocket Classics). (c) Poems—Pope: Windsor Forest; Essay on Criticism; Epistle to Dr. Arbuthnot; Essay on Man; Johnson: Vanity of Human Wishes; Collins: Ode to Simplicity; Ode to Evening; The Passions; Gray: Ode on the Spring; Ode on Eton College; Hymn to Adversity; Elegy in a Country Churchyard; The Progress of Poesy; The Bard; Cowper: Selections from The Task; On the Receipt of My Mother's Picture; Burns: Mary Morison; The Two Dogs; The Cotter's Saturday Night; To a Mouse; To a Mountain Daisy; John Anderson; Highland Mary; Scots Wha Hae; Is There for Honest Poverty; Blake: Song; Introduction to "Songs of Innocence"; The Echoing Green; The Lamb; Holy Thursday; The Defiled Sanctuary; The Tiger; The Garden of Love; From "Milton"; To the Queen. Text: English Poems of the Eighteenth Century, edited by Bronson (University of Chicago Press). Two hours a week.

21. **The English Drama.** Everyman; The Wakefield Second Shepherd's Play; Udall's Ralph Roister Doister; Norton and Sackville's Gorboduc; Marlowe's The Jew of Malta; Jonson's Volpone; Beaumont and Fletcher's The Knight of the Burning Pestle (Everyman's Library, numbers 381, 492, 383, 489, 506). Introduction to Shakespeare, by MacCracken, and others (Macmillan): Chapters II, "English Drama Before Shakespeare"; III, "The Elizabethan Theatre"; IV, "Elizabethan London." References: History of English Dramatic Literature, by A. W. Ward (Macmillan); Elizabethan Drama, by F. E. Schelling (Houghton, Mifflin & Co.) Two hours a week. *Professor Crawford.*

22. **Shakespeare.** King John; Macbeth; Hamlet; King Lear; The Winter's Tale; The Tempest (Tudor Shakespeare, Macmillan). Introduction to Shakespeare, by MacCracken, and others (Macmillan). References: Hamlet, An Ideal Prince, and other Essays by A. W. Craw-

ford (Copp Clark); *A Life of Shakespeare*, by Sidney Lee (Macmillan). Three hours a week. *Professor Crawford.*

**23. The Romantic Poets.** English Poems of the Nineteenth Century, edited by Bronson (University of Chicago Press); Selections from Wordsworth, Coleridge, Shelley, and Keats. *Lives of the Authors* in English Men of Letters Series. Three hours a week. *Professor Crawford.*

**24. The English Novel.** The Early Novel: Extracts in Simonds's Introduction to English Fiction (Heath); Goldsmith's *Vicar of Wakefield* (Everyman's Library); Walpole's *Castle of Otranto*, (King's Classics); Jane Austen's *Pride and Prejudice* (Everyman); Thackeray's *Henry Esmond* (Everyman); Dickens's *Oliver Twist* (Everyman); George Eliot's *Silas Marner* (Everyman); Stevenson's *Master of Ballantrae* (People's Library); Hardy's *The Return of the Native* (Scribner's); William de Morgan's *Joseph Vance* (Heinemann); Text: *Development of the English Novel*, by W. L. Cross (Macmillan). Two hours a week. *Assistant Professor Perry.*

(Note—As preparation for class study, students should read these novels carefully during the preceding summer.)

**25. Tennyson.** (a) Shorter Poems: *The Two Voices*; *The Palace of Art*; *The Lotus-Eaters*; *St. Simeon Stylites*; *Locksley Hall*; *The Vision of Sin*; *Break, Break, Break*; *Ode on the Death of the Duke of Wellington*; *In the Valley of Causeretz*; *Locksley Hall* (Sixty Years After); *Crossing the Bar*. (b) *In Memoriam*. (c) *Maud*. (d) *Idylls of the King*: *The Coming of Arthur*; *The Holy Grail*; *Guinevere*; *The Passing of Arthur*. Texts: *Works of Tennyson*, edited by Hallam, Lord Tennyson (Macmillan); *Tennyson*, by A. C. Benson (Methuen's Shilling Library). Two hours a week. *Assistant Professor Allison.*

**26. Browning.** *My Last Duchess*; *Count Gismond*; *The Flight of the Duchess*; *The Lost Leader*; *In a Gondola*; *The Last Ride Together*; *By the Fireside*; *The Laboratory*; *Gold Hair*; *The Statue and the Bust*; *Up at a Villa—Down in the City*; *Pictor Ignotus*; *Fra Lippo Lippi*; *The Bishop Orders his Tomb*; *How it Strikes a Contemporary*; *A Toccata of Galuppi's*; *Abt Vogler*; *Evelyn Hope*; *Memorabilia*; *Prospice*; *Childe Roland to the Dark Tower Came*; *A Grammarian's Funeral*; *An Epistle of Karshish*; *Caliban upon Setebos*; *Saul*; *Rabbi Ben Ezra*; *Confessions*; *In a Balcony*; *Old Pictures in Florence*; *The Boy and the Angel*; Text: *The Poems and Plays of Robert Browning, 1844-1864* (Everyman's Library); *Life of Browning*, by Edward Dowden (Everyman). Three hours a week. *Professor Crawford.*

**27, 28. Old English.** Text: *Bright's Anglo-Saxon Reader* (Holt). (1) First Term: Phonology, Grammar. Extracts I-V, XII, XVI, XVIII, XIX. (2) Second Term: Grammar, Versification. Extracts XX, XXI, XXII, XXIII, XXIV. *Judith*, edited by Albert S. Cook (D. C. Heath & Co.). Two hours a week. *Assistant Professor Perry.*

**29, 30. History of the English Language.** Texts: *Krapp's Modern English, Its Growth and Present Use* (Scribner's); *Smith's Studies in English Syntax* (Ginn & Co.).

References: *Jespersen's Growth and Structure of the English Language* (Stechert); *Noble's Story of English Speech* (Badger); *Emerson's History of the English Language* (Macmillan); *Greenough and Kittredge's Words and Their Ways in English Speech* (Macmillan). One hour a week.

**31. Nineteenth Century Literature.** (a) *Prose.* Selections from Newman, Arnold, Huxley, Ruskin, and Carlyle, in *Materials for the Study of English Literature and Composition*, edited by Frank Aydelotte,

(Oxford). (b) Poetry. English Poems of the Nineteenth Century, edited by Bronson (University of Chicago Press): Selections from Mrs. Browning, Clough, Arnold, Rossetti, Swinburne. One hour a week. *Assistant Professor Allison.*

**32. Contemporary and Canadian Poets.** (a) British Contemporary Poets. Text: Poems of To-Day, published for the English Association (London), by McClelland & Stewart (Toronto). Selections from Robert Bridges, Rupert Brooke, W. H. Davies, Walter De La Mare, Rudyard Kipling, John Masefield, Alice Meynell, Henry Newbolt, Francis Thompson, William Watson, W. B. Yeats.

(b) Canadian Poets. Text: The Oxford Book of Canadian Verse. Special attention will be paid to the selections from the following: Charles Sangster, Charles Mair, Isabella Crawford, W. H. Drummond, Charles G. D. Roberts, Wilfred Campbell, Bliss Carman, Archibald Lampman, Duncan C. Scott, Pauline Johnson. Additional readings in the authors named may be assigned by the instructor. Reference: A History of English Canadian Literature to Confederation, by Ray Palmer Baker (Harvard University Press). One hour a week. *Assistant Professor Allison.*

Pre-Engineering:	Courses 1, 2, 3, 4, or 9, 10, 11, 12.
First Pre-Medical:	Courses 1, 2, 3, 4, or 9, 10, 11, 12.
Second Pre-Medical:	Courses 13, 14, 15, 16.
First Year Arts:	Courses 9, 10, 11, 12.
First Year Pharmacy:	Courses 1, 2, 3, 4.
First Year, Science:	Courses 1, 2, 3, 4.
First Year, Engineering:	Courses 5, 6, 7, 8.
Second Year, Arts:	Courses 13, 14, 15, 16.
Third Year, Arts (Major):	Courses 17, 18, 19, 20, 21, 22.
(Minor):	Courses 19, 21, 22.
(General):	Courses 19, 22.
Fourth Year, Arts (Major):	Courses 23, 24, 25, 26, 27, 28, or 23, 24, 25, 26, 29, 30, 31, 32.
(Minor):	Courses 25, 26, 31, 32.
(General):	Courses 25, 26.

## DEPARTMENT OF FRENCH

W. F. Osborne, M.A.	<i>Professor</i>
F. C. Green, M.A., Ph.D.	<i>Assistant Professor</i>
Celine A. Ballu, M.A.	<i>Lecturer</i>
A. Marie Haynaud, B.A.	<i>Lecturer</i>

N.B.—For key to system of numbering courses, see page 4.

**1. 2. French Practice.** First Term: The first thirty lessons in *Le Premier Livre*, by A. and B. Méras, published by the American Book Company. Second Term: last thirty lessons in same text. The April examinations will include an oral test.

**3. 4. French Authors.** First Term: Class Reading: Daudet, *Le Petit Chose*, edited by V. E. François, and published by Ginn and Company. To be read privately by student and included in examination: Eugène Labiche, *La Grammaire*, published by Heath and Company. Second Term: Class reading, Ludovic Halévy, *L'Abbé Constantin*, edited by T. Logie, and published by Heath. To be read privately by student

and examined upon: Augier and Sandeau; Le Gendre de M. Poirier published by Heath.

**5, 6. French Practice.** First Term: Elementary French Grammar, by E. W. Olmsted (Holt & Co.) to end of Lesson XIX, together with intensive study of necessary verbs. Second Term: Same text, Lesson XX to end. Special study of verbs continued. In these courses stress will be laid on the practical side of the work prescribed.

**7, 8. French Authors.** First Term: Jules Verne, *Le Tour du Monde En Quatre-Vingts Jours*, edited by Edgren, and published by Heath, pp. 1-68. Second Term: p. 68 to end.

**9, 10. English into French.** First Term: Chapters I-XI inclusive, Part I, in *Exercises in French Composition* (2nd edition revised) edited by Wm. Koren and published by Henry Holt. Second Term: Same text, Chapters XII-XVI inclusive in Part I, together with Parts III and IV.

**11, 12. French Authors.** First Term: Class Reading, Anatole France, *Le Crime de Sylvestre Bonnard*, edited by Borgherhoff and published by Heath. To be read privately by student and included in examination: Labiche et Martin, *La Poudre aux Yeux*, edited by B. W. Wells, and published by the Copp, Clark Co. Second Term: Class reading, Lavedan, *Le Duel*, edited by S. H. Bush and published by Henry Holt. To be read privately by student and examined upon: René Bazin, *Six Contes*, edited by G. H. Clark (Clarendon Press, Toronto).

**13, 14. French Authors** (for Second Year Pre-Medical Course). First Term: Anatole France, *Le Crime de Sylvestre Bonnard*, edited by Borgherhoff and published by Heath. Second Term: Lavedan, *Le Duel*, edited by S. H. Bush and published by Henry Holt.

**15, 16. French into English.** First Term: Malherbe, Balzac, Descartes, Corneille, de Retz, Pascal, La Rochefoucauld, Molière, La Fontaine in *Anthology of French Prose and Poetry*, edited by Vreeland and Michaud and published by Ginn and Co. Second Term: Boileau, Madame de Sévigné, Madame de la Fayette, Racine, Bossuet, Bourdaloue, La Bruyère, Fénelon, Fontenelle, Saint-Simon, in *Anthology of Vreeland and Michaud* as above. The object of this course will be to aim at accuracy and general excellence in the matter of translation. At the same time the authors will be studied and presented in their historical setting. In connection with each author the student will use Des Granges, *Histoire de la Littérature Française*, (Librairie Hatier, Paris, 18th Edition).

**17, 18. Seventeenth Century Literature and History.** First Term: Rotrou, Saint Genest and Vencelas, (edited by T. F. Crane and pub. by Ginn & Co.); Corneille, *Le Cid* and Horace (in edition of *Les Classiques pour Tous*, Librairie A. Hatier, Paris); Pascal, *Les Provinciales* and *Entretien avec M. de Saci* (ed. by F. M. Warren, and pub. by Heath); Racine, *Britannicus* and *Athalie* (ed. *Classiques pour Tous*, Hatier); Boileau, *L'Art Poétique* and *Satires* (ed. *Classiques pour Tous*, Hatier). Second Term: Bossuet, *Trois Oraisons Funèbres* (*Classiques pour Tous*, Hatier); Madame de Sévigné, *Letters* (ed. by J. A. Harrison and pub. by Ginn & Co.); Madame de la Fayette, *La Princesse de Clèves* (Ginn & Co.); Molière, *Les Précieuses Ridicules* and *Tartuffe* (*Classiques pour Tous*, Hatier); La Bruyère, *Caractères et Portraits* (*Classiques pour Tous*, Hatier); Fénelon, *Lettre à l'Académie* (*Classique pour Tous*, Hatier); Saint-Simon, *La Cour de Louis XIV* and *Portraits* (*Classiques pour Tous*, Hatier). In this course there will be no translation in class, and the student should aim to read only in French. The object will be to study the pieces prescribed as works of art and as reflections of the literary and historical conditions of which they are the product. Des Granges, Histoire de la Littérature Française, (prescribed here, as in Courses 15 and 16) will be

used regularly by the student in connection with the authors concerned, and a constituent part of the Course (to be included in the Examination and to be reckoned as a basis for Term Marks) will be collateral reading on the conditions and institutions of 17th Century France, to be done in the Library under direction of the Professor.

**19, 20. Explication de Textes.** Both Terms: Daudet, *Neuf Contes Choisis*, ed. by V. E. François (Holt). This course will consist of studies in style and exercises in original composition. Being conducted in French, it will meet the requirements for conversational practice. Fifty per cent. of the marks accorded to this course will be allotted to Class Work and exercises assigned in connection therewith.

**21, 22. French into English.** First Term: *Le Sage*, Montesquieu, Marivaux, Vauvenargues, Voltaire, Rousseau, Diderot, Buffon, Beaumarchais, Bernardin de Saint-Pierre, André Chénier in *Anthology of French Prose and Poetry*, ed. by Vreeland and Michaud and pub. by Ginn & Co. Second Term: *Madame de Staël*, Chateaubriand, Lamartine, Alfred de Vigny, Victor Hugo, Sainte-Beuve, Alfred de Musset, George Sand, Michelet, Balzac, Théophile Gautier, Leconte de Lisle, Flaubert, Taine, Renan, Zola, Sully-Prudhomme, Loti, Verlaine, Anatole France in *Anthology of Vreeland and Michaud* as above. For object and method of course compare last paragraph under course 15-16. In connection with each author the student will use *Des Granges, Histoire de la Littérature Française* (Librairie Hatier, Paris, 18th Edition).

**23. Eighteenth Century Literature and History.** Regnard, *Le Joueur* (in *Classiques pour Tous*, Librairie A. Hatier, Paris); *Le Sage*, Turcaret, ed. by Kerr (Heath); Montesquieu, *Lettres Persanes*, ed. by Cru (Oxford University Press, Toronto); L'Abbé Prévost, *Manon Lescaut*, International Library (Gowans and Gray); Voltaire, *Zaïre*, ed. by Cabeen (Heath); Marivaux, *Le Jeu de l'Amour et du Hasard* (ed. by Fortier, pub. by Heath); Bernardin de Saint-Pierre, *Paul et Virginie* (in *Edition of Les Classiques pour Tous*, Librairie A. Hatier, Paris); Buffon, *Discours sur le Style* (Classiques pour Tous, Hatier); Diderot, *Selections* ed. by Giese (Heath); Beaumarchais, *Le Mariage de Figaro* (Classiques pour Tous, Hatier). In this course there will be no translation in class, and the student should aim to read only in French. The object will be to study the pieces prescribed as works of art and as reflections of the literary and historical conditions of which they are the product. *Des Granges, Histoire de la Littérature Française* (prescribed here as in Courses 21 and 22) will be used regularly by the student in connection with the authors concerned and a constituent part of the course (included in the Examination and reckoned as a basis for Term Marks) will be collateral reading to be done in the Library under direction of the Professor.

**24. Nineteenth Century Literature and History.** Chateaubriand, *Mémoires d'Outre-Tombe* (Classiques pour Tous, Hatier, Paris); De Vigny, *Chatterton*, ed. by E. Lanvière (Clarendon Press); Representative French Lyrics of the 19th century, ed. by G. N. Henning (Ginn); Alfred de Musset, *Il ne faut jurer de rien* (Classiques pour Tous, Hatier); Sainte-Beuve, *Selected Essays*, ed. by J. R. Effinger (Ginn); Balzac, *Le Curé de Tours*, ed. by F. M. Warren, (Holt); Guy de Maupassant, *Huit Contes choisis* (Heath); Rostand, *Les Romanesques*, ed. by H. Le Daum (Ginn); Loti, *Pêcheur d'Islande*, ed. by Super (Heath). Companion-reading: *Des Granges, Histoire de la Littérature Française*. The note appended to course 23 above applies in its entirety here.

**25, 26. Explication de Textes.** Both Terms: *Contes Français*, ed. by D. L. Buffum (Holt). This course will consist of studies in style and



exercises in original composition. Being conducted in French it will meet the requirements for conversational practice. Fifty per cent. of the marks accorded to this course will be allotted to class work and exercises assigned in connection therewith.

First Year, Arts:	Courses 1, 2, 3, 4.
First Year, Science:	Courses 5, 6, 7, 8.
Pre-Engineering Year:	Courses 5, 6, 7, 8.
First Pre-Medical Year:	Courses 5, 6, 7, 8.
First Year, Pharmacy:	Courses 5, 6, 7, 8.
Second Year, Arts:	Courses 9, 10, 11, 12.
Second Pre-Medical Year:	Courses 13, 14.
Third Year, Arts (Major):	Courses 15, 16, 17, 18, 19, 20.
(Minor):	Courses 15, 16, and either 17, 18, or 19, 20.
(General):	Courses (a) 17 and 18 or (b) 19 and 20.
Fourth Year, Arts (Major):	Courses 21, 22, 23, 24, 25, 26.
(Minor):	Courses 21, 22, and either 23, 24, or 25, 26.
(General):	Courses (a) 23 and 24 or (b) 25 and 26.

#### DEPARTMENT OF GERMAN

J. H. Heinzelmann, B.A., Ph. D. .... *Professor*  
 Helen F. Bryce, B.A. .... *Assistant*

N.B.—For key to system for numbering courses, see page 4.

**1, 2. Elementary German.** The course is offered as a second choice of a First Year language option for those who enter the University without German. For the First Term the work will cover Keyser and Montser's Foundations of German (Amer. Book Co.), pages 1-65 and 138-147, and Martini's First German Reader (Ginn), pages 1-15. For the second term the work in the Grammar will extend to p. 164 and in the Reader to p. 80. Four hours a week.

**3, 4. First Year Authors.** The reading for the First Term will consist of Storm's Immensee (Holt), Minckwitz and Unwerth's Edelsteine (Ginn) and Hatfield's Shorter German Poems (Heath), Part I. Poems 2, 8, 10, 11, 18 and 20 to be memorized.

During the second term the reading will be Heyse's L'Arrabbiata (Heath), Gerstäcker's Garmelshausen (Ginn), Zschokke's Der Zerbrochene Krug (Heath), and Shorter German Poems, Part II. Poems 27, 29, 31 and 35 are to be memorized.

**5, 6. First Year Oral and Written Composition.** Easy German Conversation by Allen and Phillipson (Holt). For the First Term, pages 1-37 and 97-109. The student is further required to write a number of brief essays based upon the reading in the authors.

During the Second Term the work will cover pages 39-93 and 109-126, with additional essays in connection with the reading.

**7, 8. Second Year Authors.** For the First Term the reading will consist of Seidel's Leberecht Hünchen (Heath) and Bruns' Book of German Lyrics (Heath), pp. 1-62. For the Second Term the reading will cover Rosegger's Waldheimat (Ginn), Ernst's Flachsmann als Erzähler (Ginn), and the remainder of Bruns' Book of German Lyrics.



**9, 10. German Composition.** For the First Term, Carrington and Holzwarth's German Composition, Part I. The student is further required to write a number of short essays on the material covered in the authors. For the Second Term, Part II of German Composition with additional essays based on the authors.

**11. The German Short Story.** Its history and technique in the nineteenth century. Eichendorff, *Aus dem Leben eines Taugenichts* (Heath); Storm, *In St. Jürgen* (Ginn); Heyse, *Vetter Gabriel* (Holt); Keller, *Romeo und Julia auf dem Dorfe* (Holt); Rosegger, *Das Holzknechtshaus* (Oxford Press); Meyer, *Gustav Adolfs Page* (Heath); Schnitzler, *Lieutenant Gustl* (German edition). Two hours per week. (Not to be given in 1922-3).

**12. History of German Literature to 1700.** Lectures on the main currents of German literature in its earlier periods, illustrated by the reading of selections of some of the more important masterpieces. (Not given in 1922-23.)

**13. Schiller.** The author's life and the critical reading of *Kabale und Liebe* (Holt), *Wallensteins Tod* (Heath), *Wilhelm Tell* (Holt), and *Poems* (Holt). Two hours per week. (Not offered in 1922-23).

**14. The German Novel.** Lectures on its history will accompany the reading of typical examples. Two hours per week.

**15, 16. Oral and Written Composition.** Two hours per week.

**17. Lessing.** A Study of the life and time of Lessing will accompany the reading of *Minna von Barnhelm* (Holt), *Emilia Galotti* (Heath), and *Nathan der Weise* (Ginn). Three hours per week. (Not given in 1922-23).

**18. The Modern German Drama.** A study of the development of the German drama in the nineteenth century, with some consideration of related movements in other European countries. About twenty representative dramas will be read and discussed. Three hours per week.

**19. The Romantic School.** Lectures on the history of German literature from 1800 to 1850, with collateral readings and reports. Three hours per week.

**20. Goethe.** A detailed study of his life and literary development, together with the reading of the following: *Poems* (Holt), *Götz von Berlichingen* (Ginn), *Werther* (Oxford Press), *Faust, Part I.* (Heath) *Iphigenie* (Ginn). (Not given in 1922-23.)

**21. Modern Germany.** A survey of its historical development from 1740 to 1914. Two hours per week.

Pre-Engineering Year:	Courses 1, 2, or 3, 4, 5, 6.
First Pre-Medical Year:	Courses 1, 2, or 3, 4, 5, 6.
First Year, Science:	Courses 1, 2, or 3, 4, 5, 6.
First Year, Arts:	Courses 1, 2, or 3, 4, 5, 6.
First Year, Pharmacy	
(Degree Course)	Courses 1, 2, or 3, 4, 5, 6.
Second Year, Arts:	Courses 7, 8, 9, 10.
Third Year, Arts: (Major):	Courses 14, 15, 16, 18, 19, 21.
(Minor):	Courses 18, 19, and one hour per week of 15 and 16.
Fourth Year, Arts: (Major):	Courses 14, 15, 16, 18, 19, 21.
(Minor):	Courses 18, 19.
(General):	Courses 14, 19, and one hour per week of 15 and 16.

## DEPARTMENT OF PHILOSOPHY

Henry W. Wright, B.A., Ph.D. .... *Professor*  
 Rupert C. Lodge, M.A. .... *Professor*

N.B.—For key to system of numbering courses, see page 4.

1, 2. **Psychology.** Pillsbury's essentials of Psychology, James' Briefer Course, Chapters X-XVIII. First Term: Pillsbury, chs. I-VII. Second Term: Pillsbury, remaining chapters, and the chapters from James. Two hours a week. *Professor Wright.*

1a, 2a. **Logic.** Lodge's Introduction to Modern Logic. First Term: Parts I and II to the end of ch. XV. Second Term: ch. XVI to the end of Part III. Two hours a week. *Professor Lodge.*

1b, 2b. **Ethics.** Wright's Self-realization. Two hours a week. *Professor Wright.*

3, 4. **Social Philosophy.** First Term: Hobhouse, Morals in Evolution, Part I and Part II, chs. I-IV. Second Term: MacDougall's Social Psychology, and Wallas' The Great Society. Extra-mural students are required to read MacDougall's The Group Mind. Four hours per week. *Professor Wright.*

5, 6. **History of Philosophy.** (Ancient and Medieval). Bakewell, Sourcebook in Ancient Philosophy; Plato, Republic (omitting Bks. VIII-IX); Aristotle, Ethics (omitting Bks. VIII-IX); St. Augustine and St. Thomas Aquinas, Selections; Rogers, Student's History of Philosophy. First Term: to end of Plato. Second Term: Aristotle to end of Medieval Period. Four hours a week. *Professor Lodge.*

7, 8. **History of Philosophy.** (Modern) Rand Modern, Classical Philosophers; Selections from Russell, Problems of Philosophy, Bradley, Appearance and Reality; James, Pragmatism; Dewey, Creative Intelligence; Varisco, The Great Problems; Bergson, Introduction to Metaphysics, etc.; Rogers, Student's History of Philosophy. First Term: Bruno to Kant (not including Kant). Second Term: Kant to the Present Day. Four hours a week. *Professor Lodge.*

9, 10. **Philosophy of Religion.** First Term: James, Varieties of Religious Experience. Second Term: Wright, Faith Justified by Progress; Ward, Pluralism and Theism. (N.B.—In place of the above texts, extra-mural students will offer Galloway, Philosophy of Religion). Two hours week. *Professor Wright.*

11, 12. **Problems of Philosophy.** Perry, Present Tendencies in Philosophy, with assigned readings. (N.B.—In place of this, extra-mural students will offer Taylor, Elements of Metaphysics, with the readings in Bradley's Appearance and Reality indicated at the end of each chapter in Taylor). Two hours a week. *Professor Wright.*

## GRADUATE COURSES\*

13, 14. **Seminar in Logic and History of Philosophy.** The intensive study of problems leading towards original research. Two hours a week. *Professor Lodge.*

15, 16. **Seminar in Ethics and Metaphysics.** The intensive study of problems leading towards original research. Two hours a week. *Professor Wright.*

\*Students intending to take graduate work in Philosophy should in all cases consult the Examiners in Philosophy, in order to ascertain what type of problem they are fitted to investigate.

Other undergraduate courses, instruction in which is not provided at the University\*\*, but which may be studied for the B.A. Degree.

**17, 18. History of Ethics.** Rand, Classical Moralists; Sidgwick, Outline of History of Ethics. First Term: to end of Wollaston. Second Term: Butler to end. Four hours a week.

**19, 20. Systematic Ethics.** First Term: Dewey and Tufts, Ethics. Second Term: Rashdall, Theory of Good and Evil. Four hours a week.

**21, 22. Philosophy of Plato.** First Term: Euthyphro, Apology, Crito, Phaedo, Protagoras, Gorgias, Euthydemus, Alcibiades I & II, Hippias Major and Minor, Charmides, Laches, Lysis, Menexenus, Symposium (Banquet), Phaedrus, Ion, in the translation and with the Introductions of Jowett, and with the relevant portions of Zeller's Plato. Second Term: All the remaining Dialogues, in the translation and with the Introductions of Jowett, and with the relevant portions of Zeller's Plato. Four hours a week.

**23, 24. Philosophy of Locke.** First Term: Bks. I-II of the Essay, in Fraser's edition, including the Introduction and Notes, and with the relevant portions of J. Gibson's Locke's Theory of Knowledge. Second Term: The Conduct of the Understanding, and Bks. III-IV of the Essay, with Fraser's Notes, and with the relevant portions of Gibson's Locke's Theory of Knowledge. Four hours a week.

**25, 26. Philosophy of Berkeley and Hume.** First Term: Berkeley, Principles of Human Knowledge, and Three Dialogues between Hylas and Philonous, (Fraser's Edition), and A. C. Fraser, Berkeley. Second Term: Hume, Enquiry Concerning the Human Understanding (edited by Green and Grose). Four hours a week.

**27, 28. Philosophy of Kant.** First Term: Watson's Selections from Kant, to the end of the Critique of Pure Reason, together with the relevant portions of Watson's Kant's Philosophy Explained. Second Term: The whole remaining portion of Watson's Selections, and Kant's Philosophy Explained. Four hours a week.

**29, 30. Psychophysics.** Registration only by permission of the examiners in Philosophy.

**31, 32. History of Psychology.** Rand, Classical Psychologists, Brett, History of Psychology, Beare, Greek Theories of Elementary Cognition; Burnet, Greek Philosophy from Thales to Plato. First Term, to Descartes. Second Term, Descartes to present day.

**33, 34. Social Psychology.** Registration only by permission of the examiners in Philosophy.

**35, 36. Advanced Social Psychology.**

Second Year, Arts: (1922-1923): Courses 1, 2; 1a, 2a.

(1923-1924) Courses 1, 2; 1b, 2b.

Third Year, Arts: General Course 3 or 5.

Minor: Courses 3-4, or 5-6

Major: Courses 3-4 or 5-6.

Full Course: Courses 3-4, 5-6, 17-18, and either 21-22, or 23-24.

Fourth Year, Arts: General: Course 7, or 9, 10.

Minor: Courses 9-10, 11-12, as sequence to 3-4, or 7-8, as sequence to 5-6.

Major: Courses 7-8, 9-10, 11-12.

Full Course: Courses 7-8, 9-10, 11-12, 19-20, and either 25-26, or 27-28.

Other combinations may be permitted by the examiners in Philosophy.

\*\*Instruction in 17-20, 23, 24, 27-36, is provided in Wesley College.

## DEPARTMENT OF HISTORY

Chester Martin, M.A., B.Litt.....	Professor
Daniel C. Harvey, M.A.....	Assistant Professor
Joseph E. Howe, M.A.....	Lecturer
Ursilla N. Macdonnell, M.A., Ph.D.....	Lecturer

N.B.—For key to system of numbering courses, see page 4.

1. **Ancient History.** A. J. Grant, *A History of Europe* (Longmans), Part I., supplemented by lectures and class work.

2. **Mediaeval History.** A. J. Grant, *A History of Europe* (Longmans), Part II., supplemented by lectures and class work.

For Courses 1 and 2 students are advised to use the historical atlases in Everyman's Library—Classical History and European History.

3, 4. **Modern History.** Modern History, 1400-1648, and 1648 to the present time. An elementary text such as Adams' *Mediaeval and Modern European History*, pp. 157-458, will be supplemented by readings from the Rivington Series, etc. Extra-mural students are required and intra-mural students are advised to read Robinson's *History of Western Europe*, Vol. 2. Two lectures and one essay period per week.

9, 10. **Development of British Political Institutions.** A survey of British and Dominion History chiefly from the constitutional point of view.

The documentary groundwork of the course will be found in Stubbs' *Select Charters*, Prothero's *Select Statutes and other Constitutional Documents*, Gardiner's *Constitutional Documents of the Puritan Revolution*, Egerton's *Federations and Unions in the British Empire*, etc.

Emphasis during the second term will be placed upon the conflict against the Stuarts; the development of the parliamentary party and the cabinet; the practice of responsible government; the system of colonial administration and government; the American Revolution and responsible government in Canada and Nova Scotia; the American and Canadian Confederation, with subsequent confederations in the British Dominions. Three lectures and one essay period per week.

11, 12. **British History and Expansion from 1485.** These courses with 9 and 10 make up the Third Year Major Course. Emphasis, increasing throughout the course, will be placed on the growth of the British Empire and in addition to a text such as J. R. Green's *Short History*, students should possess and know J. R. Seeley, *Expansion of England*, and Egerton, *Origin and Growth of British Colonies*. For essay work and special topics students will be referred to the works of Gardiner, Firth, Macaulay, Lecky, Spencer Walpole and the *Biographies of Cromwell* (C. H. Firth), Chatham (B. Williams), Pitt (J. Holland Rose), Gladstone (Lord Morley), Cobden (Lord Morley), Bright (G. M. Trevelyan), as well as to the more accessible books such as G. M. Trevelyan, *England under the Stuarts*; C. Grant Robertson, *England under the Hanoverians*; Marriott, *England in the Nineteenth Century*. Similarly for British expansion in addition to the works of Durham and Gibbon Wakefield, reference will be made to works such as those of Beer, Egerton, Lucas, Pollard (*The British Empire*), and others. Four hours per week.

13, 14. **European History, 1789 to Present Time.** The aim of this course is to provide an historical background to present day National and International problems. A study will be made of the outstanding characters, tendencies, movements and events of the period, among which the following may be indicated: The French Revolution, Napoleon, The Congress of Vienna, The Holy Alliance and the Concert of Europe, Metternich and the Reaction after 1815, The War of Greek Independence, The Revolu-

tion of 1830 and the Separation of Belgium from Holland, The Revolution of 1848, The Second Empire in France, The Crimean War and the Eastern Question, Reform and Reaction in Russia, The Prussianization of Germany, The Dual Monarchy of Austria-Hungary, The Union of Italy, The Franco-Prussian War and the Establishment of the German Empire, The Balkan Nationalities and the Russo-Turkish War, The Congress of Berlin, The Expansion of Europe in Asia and Africa, The Triple Alliance and the Triple Entente, The Growth of Internationalism, The Russo-Japanese War, The Turco-Italian War, The Balkan Wars, The War of 1914-18, The League of Nations and the Peace of Versailles.

A general survey of the period may be made from: Rose, *The Revolutionary and Napoleonic Era*; Alison Phillips, *Modern Europe*, or E. Lipson, *Europe in the 19th Century*; Anderson, *Constitutions and Documents for the History of France 1789-1907*; Oakes and Mowat, *The Great European Treaties of the 19th Century*; Robertson and Bartholomew, *A Historical Atlas of Modern Europe*.

Reference will be made for essays and general reading to the following primary and secondary sources among others: *Memoirs of Mme. Remusat, Mme. Campan, Bourrienne, Metternich, Talleyrand, Bismarck, Crispi; Rousseau, Social Contract; Young, Travels in France; Burke, Reflections on the French Revolution; Karl Marx, Revolution and Reaction in Germany and Austria; Cambridge Modern History; Lavisse et Rambaud, Histoire Generale; Aulard, French Revolution; Carlyle, French Revolution; Acton, Lectures on the French Revolution; Madelin, The French Revolution; Fisher, Rose, Fournier, Napoleon I; Coquelle, Napoleon and England; Seeley, Life and Times of Stein; Mahan, Influence of Sea Power on the French Revolution and Empire; Fisher, Napoleonic Statesmanship in Germany; Dawson, The Evolution of Modern Germany and the German Empire 1867-1914; Grant Robertson, Bismarck; Stillman, The Union of Italy; King, A History of Italian Unity; Thayer, Cavour; King, Mazzini; Trevelyan, Garibaldi; Fisher, Bonapartism; Simpson, The Rise of Napoleon III; De La Gorce, Histoire du Second Empire; Seton-Watson, Racial Problems in Hungary; Forbes, History of the Balkans; Marriott, The Eastern Question in European Diplomacy; Rose, The Development of European Nations; Muir, The Expansion of Europe; Muir, Nationalism and Internationalism; Zimmern, Nationality and Government. Four hours a week.*

**15, 16. Canadian History, 1763-1867.**—The following outline will suggest the chief phases to be considered: The period from the cession to the Constitutional Act in some detail; the growth of parties; the War of 1812; the opening of the West; Rebellion in Upper and in Lower Canada; Durham's Report; Responsible Government; Confederation; Manitoba. The following will be among the chief books of reference: Shortt and Doughty, *Constitutional Documents, 1763-1791*; Doughty and McArthur, *Documents, 1791-1818*; Egerton and Grant, *Canadian Constitutional Development*; Oliver, *The Canadian North-West*, 2 vols.; Durham's Report, ed. Lucas; Pope, *Confederation Documents, Confederation Debates*; Egerton, *Canada, 1763-1901*; Lucas, *War of 1812*; Garneau, *Histoire du Canada*; Shortt and Doughty (ed.), *Canada and Its Provinces*, 23 vols.; Wrong and Langton (ed.), *Chronicles of Canada Series*; *The Makers of Canada Series*. Three lectures and one essay period per week.

First Year, Arts:	Courses 1, 2.
Second Year, Arts:	Courses 3, 4.
Third Year, Arts:	Major, Courses 9, 10, 11, 12. Minor, Courses 9, 10.
Fourth Year, Arts;	Major, Courses 13, 14, 15, 16.

The periods outlined for the History Majors and Minors of the Third and Fourth Years are covered by formal lectures supplemented by tutorial work with small groups of students. Essays, prepared and discussed twice a week with the instructor in charge, are intended to cover as far as possible the chief problems under consideration.

## DEPARTMENT OF POLITICAL ECONOMY AND POLITICAL SCIENCE

Archibald Brown Clark, M.A.	Professor
Reginald F. Jones, M.A.	Assistant Professor
Lily A. McCullough, M.A., LL.B.	Assistant

N.B.—For key to system of numbering courses, see page 4.

**1, 2. Economics.** The Character and Scope of Political Economy. Methods of Investigation; Economic Laws; Relation of Economic Science to Practice; Leading Principles of Consumption, Production and Distribution of Wealth. Outlines of English Economic History. First Term: Nicholson, "Elements of Political Economy," Introduction and Book I; Ashley, "Economic Organization of England," Chapters 1-4. Second Term: Nicholson, Book II; Ashley, Chapters 5-8. Four hours a week.

**3, 4. Economic Theory.** A survey of the leading principles of Political Economy, together with the chief landmarks in the history of Economic Theory. A more intensive study of the Theory of Exchange, including Value, Money, Credit, Currency and Banking, Commercial Crises, the Money-Market, the Rate of Interest and the Rate of Discount. First Term: Nicholson, "Elements of Political Economy," Books I and II (revision), Book III, chapters 1-4; Mill, "Principles of Political Economy," Book III, chapters 1-6 and 14-16; L. L. Price, "Political Economy in England," chapters 1-4. Second Term: Nicholson, Book III, chapters 5-12; Mill, Book III, chapters 7-13 and 23-24, 26; H. Withers, "The Meaning of Money"; L. L. Price, chapters 5-8. Three hours a week.

**5, 6. Foreign and Colonial Trade Policy—History and Theory.** The historical development of the Theory of Foreign Trade, with special reference to Adam Smith's Critique of the Mercantile System; the Theory of International Trade and International Values; Free Trade and Protection; the Foreign Exchanges. First Term: Adam Smith, "Wealth of Nations," Book II, chapter 5; Book III, chapter 1; Book IV, chapters 1-2; Nicholson, "A Project of Empire," chapters 1-8, 11; "Elements," Book III, chapter 13, secs. 1-4, chapter 15; Book V, chapter 7; Mill, "Principles," Book III, chapter 17; Book V, chapter 10, sec. 1; Bastable, "Theory of International Trade," chapters 1, 8, 9. Second Term: Adam Smith, Book IV, chapters 3-8; Nicholson, "Project of Empire," chapters 7-16; "Elements," Book III, chapter 13, secs. 5, 6, chapter 14; Book V, chapter 9; Mill, Book III, chapters 18-22, 25; Bastable, chapters 2-7, 10, and appendices; Withers, chapter 10. Two hours a week.

**7, 8. Economic History.** The chief landmarks in English Economic History and a more detailed study of the Modern period; Transition from Mediaeval to Modern Economic Conditions; The Elizabethan Regulation of Industry and Commerce; The Poor Law; Foreign Trade Companies; Colonization and Colonial Policy; Origin and Development of Banking; The Industrial Revolution; Trade Unionism; Factory Legislation; The Free Trade Movement. First Term: Cunningham, "Growth of English Industry and Commerce," Vol. II, Part I, pp. 1-402. Second Term: Cunningham, Part I, pp. 403-608, and Part II. Two hours a week.



**9, 10. (Minor) Economic Theory.** A survey of the leading principles of Economics, together with the chief landmarks in the history of Economic Theory. A more intensive study of the Theory of Exchange, including Value, Money, Credit, Banking, the Rate of Interest and the Rate of Discount, International Trade, and the Foreign Exchanges. First Term: Nicholson, "Elements of Political Economy," Books I and II (revision), Book III, chapters 1-4, chapter 13, secs. 1-4, chapter 15; Book V, chapter 7; Mill, "Principles of Political Economy," Book III, chapters 1-6, 14-17; Book V, chapter 10, sec. 1; Bastable, "Theory of International Trade," chapters 1, 8, 9; L. L. Price, "Political Economy in England," chapters 1-4. Second Term: Nicholson, Book III, chapters 5-12; chapter 13, secs. 5, 6; chapter 14; Book V, chapter 9; Mill, Book III, chapters 7-13, 18-26; Withers, "The Meaning of Money"; Bastable, chapters 2-7, 10 and appendices; L. L. Price, chapters 5-8. Four hours a week.

**11, 12. Political Economy** (for Accountants, Bankers and Business Men). A general survey of the principles governing Production and Distribution of Wealth; and a more intensive study of the Theory of Exchange, including Value, Money, Credit, Banking, the Money-market, the Rate of Interest and the Rate of Discount, International Trade, the Foreign Exchanges, and the Stock Exchange.

Reading in supplement of the lectures: Nicholson, "Elements of Political Economy," a general knowledge of Books I and II, with a more exact knowledge of Book III; Withers, "The Meaning of Money"; Escher "Foreign Exchange Explained." Two hours a week.

**13, 14. Economic Theory.** (a) A critical study of some of the more difficult problems in Economic Theory and the History of Theory, and (b) Application of Economic Principles to the more important present-day Economic Problems. Marshall, "Industry and Trade." Two hours a week.

For reading in supplement of the lectures, references will be given to the works of the leading authorities on the subjects under discussion.

**15, 16. Public Finance.** The characteristics and principles of Taxation and Public Expenditure; The Incidence of Taxation; Provincial and Municipal Taxation in Western Canada; National Credit and National Debts. Adam Smith, "Wealth of Nations," Book V, chapters 2, 3; Mill, "Principles," Book V, chapters 2-7; Nicholson, "Principles," Vol. III, Book V, chapters 5-13, 15-18; Seligman, "Essays in Taxation," and certain chapters in the same author's "Shifting and Incidence of Taxation," and in Bastable's "Public Finance." Three hours a week.

**17, 18. Political Science.** A critical study of Political Theories in their relation to actual political development, and a survey of Comparative Politics. The Nature and Origin of the State; Forms of Government; The Sphere of the State; Principles, Methods and Limitations of Governmental Interference; The Organisation of Government; Distribution of Powers.

For reading in supplement of the lectures, students will be referred to: Pollock, "History of the Science of Politics"; I. J. C. Brown, "English Political Theory"; Hobbes, "Leviathan," Part I, chapters 13-15, Part II; Locke, "Civil Government," Book II; Rousseau, "Contrat Social" (Eng. Trans.); Mill, "On Liberty," and "Principles of Political Economy," Book V, chapters 1, 8-11; Adam Smith, "Wealth of Nations," Book V, chapter I; Nicholson, "Principles of Political Economy," Vol. III, Book V, chapters 1 to 4; Hobhouse, "Liberalism"; E. Jenks, "The State and the



Nation," and to the relevant parts of Maine, "Early History of Institutions"; Sidgwick, "Elements of Politics" and "Development of European Polity"; Mill, "Representative Government"; Bagehot, "English Constitution"; Lowell, "The Government of England" and "Governments and Parties in Continental Europe"; Bryce, "The American Commonwealth," "Studies in History and Jurisprudence" and "Modern Democracies"; Keith, "Responsible Government in the Dominions" and "Imperial Unity and the Dominions". Two hours a week.

19, 20. (Minor) **Economic and Political Theory.** A study of the Economic Functions of Government, Public Finance, and Modern Political Thought. First term: Adam Smith, "Wealth of Nations," Book V, chapters 1, 2; Mill, "Principles of Political Economy," Book V, chapters 1, 2, 8 to 10; Nicholson, "Principles of Political Economy," Vol. III, Book V, chapters 1, 2, 5 to 9, 14, 19; Hobhouse, "Liberalism," chapters 1 to 4. Second term: Adam Smith, Book V, chapters 1 and 2 (revision); Mill, Book V, chapters 3 to 7 and 11; Nicholson, Book 5, Chapters 3, 4, 10 to 13, 15 to 18; Hobhouse, chapters 5 to 9. Four hours a week.

## GRADUATE COURSES

*(Lectures may not be offered on these Courses in 1922-23.)*

21, 22. **Political Economy** (Principal Subject). Marshall, "Principles of Economics." Haney, "History of Economic Thought"; Keynes, "Scope and Method of Political Economy"; Nicholson, "War Finance"; Seligman, "Shifting and Incidence of Taxation." (Two Papers and Thesis.)

23, 24. **Economic History** (Subordinate Subject.) Nicholson, "Rents, Wages and Profits in Agriculture"; Taussig, "Some Aspects of the Tariff Question"; Fay, "Life and Labour in the Nineteenth Century." (One Paper.)

25, 26. **Political Science** (Subordinate Subject). Dicey, "Law and Public Opinion in England"; MacCunn, "Six Radical Thinkers"; E. Barker, "Political Thought in England from Herbert Spencer to the Present Day." (One Paper.)

*Note.*—Candidates for the M.A. Degree in this Department may combine Political Economy with *either* (a) Economic History or (b) Political Science.

Second Year, Arts:	Courses 1, 2.
Third Year, Arts: Major:	Courses 3, 4, 5, 6, 7, 8.
Minor:	Courses 9, 10.
Fourth Year, Arts: Major:	Courses 13, 14; 15, 16; and 17, 18.
Minor:	Courses 19, 20.
Graduate Courses, Arts:	Courses 21, 22; 23, 24; 25, 26.
Special Courses: Accountancy:	Courses 11, 12.
Banking:	Courses 3, 4.
Finance:	Part of Courses 15, 16. (Two hours a week. Half of Joint Minor Course with Department of Mathematics.)

## DEPARTMENT OF MATHEMATICS AND ASTRONOMY

Neil Bruce MacLean, D.S.O., M.A., F.R.A.S.C.....	<i>Professor</i>
Norman R. Wilson, M.A., Ph. D.....	<i>Professor</i>
Lloyd A. H. Warren, M.A., Ph. D., F.R.A.S.....	<i>Assistant Professor</i>
William Tier, M.A.....	<i>Assistant Professor</i>
Frederick S. Nowlan, M.A.....	<i>Assistant Professor</i>
V. Valgardson, M.A.....	<i>Fellow</i>

N.B.—For key to system of numbering courses, see page 4.

## PURE MATHEMATICS

1. **Algebra.** The work contained in A. T. DeLury's *Intermediate Algebra* (Copp, Clark Co.), chapters 3, 5 (to middle of page 94), 6, 7, 8 (to page 130); introduction to logarithms and to determinants of the second and third orders.

4. **Analytical Geometry.** The analytical geometry of the straight line, circle, parabola, ellipse and hyperbola. *Crawley and Evans' Analytical Geometry* (University of Pennsylvania, Philadelphia) to page 106. Four hours per week.

5, 6. **Plane Trigonometry.** Playne and Fawdry's *Practical Trigonometry* (Copp, Clark Co.), *Logarithmic and Trigonometric Tables* by Wentworth and Hill (Ginn & Company). Students are required to become familiar with the use of tables in the solution of problems. For students in Arts and Science, two hours per week; for students in Engineering, two hours per week, First Term; three hours per week, Second Term.

7. **Synthetic Solid Geometry.** Hall and Stevens' "A School Geometry," Part VI (Macmillan Co.). Theorems 81, 83, 84, 91, 92, 94, 97, 98 and pages 383-442; or the corresponding work in Betz and Webb's *Solid Geometry* (Ginn & Co.). Two hours per week.

9. **Synthetic Plane Geometry.** A course specially selected to meet the needs of Engineering students. Hall and Stevens' Parts I to VI, (Macmillan Co.). Two hours per week.

10. **Algebra.** The binomial, exponential and logarithmic series; other series; surds and imaginary quantities; mathematical induction; undetermined coefficients; partial fractions (omitted for Pre-engineering students). This work may be found in Hall and Knight's *Higher Algebra*, (Macmillan & Co.). Two hours per week.

11. **General Mathematics.** A short course in mathematics, especially designed for students in Senior Matriculation for Medicine. Arithmetical progression; geometrical progression, with applications to compound interest, annuities, debentures, sinking funds and life insurance. A brief introduction to Trigonometry up to the solution of right-angle triangles; graphs of statistics; analytical geometry of the straight line, and those properties of the circle, the parabola and ellipse which have practical applications. Four hours per week.

13. **Analytical Geometry, Plane and Solid.** A continuation of course 4. *Analytical Plane Geometry*, with a brief introduction to *Analytical Solid Geometry*. *Crawley and Evans' Analytical Geometry*, page 107 to the end. Four hours per week.

16. **Calculus.** An elementary course in Differential and Integral Calculus with practical applications. Differentiation of algebraic and trigonometric functions, with corresponding integrations, measurement of rates, motion in curved paths, maxima and minima, definite integrals, areas and lengths of curves, volumes and surfaces. *Calculus*, March & Wolf, (McGraw-Hill Book Co., New York), to page 196, omitting sections 38, 51-54, 66, 67, 72, 74, 79-81, 84, 86-88, 91, 102. Four hours per week.

**17. Analytical Geometry.** Selections from Crawley and Evans's Analytical Geometry, page 107 to the end. Three hours per week.

**19, 20. Algebra.** Elementary determinants and their application to the solution of linear equations; partial fractions; continued fractions; hyperbolic functions; graphs of algebraic, trigonometric, inverse, exponential, logarithmic and hyperbolic functions; limiting values and vanishing fractions. Two hours per week.

**21, 22. Calculus.** An elementary course with practical applications. Differentiation, measurement of rates, motion in curved paths, maxima and minima, partial derivatives, tangents and normals, curvature, evolutes, expansions, formation of differential equations, integration, areas and lengths of curves, volumes and surfaces. A course designed for Engineering students. Calculus, March and Wolff. Four hours per week, first term; two hours per week, second term.

**23. Differential Equations.** A short course specially adapted to meet the needs of students in Engineering and which will include special topics in Engineering mathematics. Text book announced later. Two hours per week.

**25, 26. Algebra—Determinants and Theory of Equations.** A continuation of course 10. Hall and Knight's Higher Algebra, Chapters 19-26 inclusive, Chapter 29 and Chapters 33-35 inclusive. Two hours per week.

**29, 30. Differential and Integral Calculus.** A continuation of course 16. Integration, partial derivatives, tangents and normals to curves and surfaces, curvature, evolutes, expansions, formation of differential equations,  $n$ th derivatives, Leibnitz's theorem, indeterminate forms, maxima and minima, reduction formulae, double and triple integration. Calculus, March and Wolff. Three hours per week.

**31. Spherical Trigonometry.** Inverse notation, derivation of formulae, solution of the spherical triangle, areas of spherical triangles and polygons, applications to practical problems. Moritz's Spherical Trigonometry. (John Wiley & Sons, New York). Two hours per week.

**37, 38. Advanced Calculus.** A continuation of Course 29, 30. (a) Differential Calculus. Expansions; maxima and minima; various equations of a curve; derived curves; envelopes; asymptotes; singular points. (b) Integral Calculus. Volumes by triple integration; definite integrals; beta and gamma functions; pedals and roulettes; Steiner's and Holditch's Theorems; the planimeter. Three hours per week.

**39, 40. Differential Equations.** Methods used in elementary practical applications to physical and engineering problems, symbolic methods, geometrical applications and elementary general theory. Murray, Differential Equations, (Longmans, Green & Co., New York). Two hours per week.

**41. History of Mathematics.** The historical development of number systems, arithmetic, algebra, geometry, trigonometry and calculus, from the earliest times to the present. Two hours per week.

**44. Advanced Analytical Geometry.** Advanced work in conic sections, and an extension of the work in solid geometry of course 13. The Department has a considerable number of the splendid thread and plaster models of Brill, for illustrating the teaching of geometry of three dimensions. Two hours per week.

**45, 46. Projective Geometry.** A course in modern projective geometry. Detailed outline and text book announced later. Two hours per week.

## APPLIED MATHEMATICS

**52. Solid Geometry and Mensuration.** Course in solid geometry as outlined in 7. The mensuration of plane and solid figures. Superficial area, and volume of the pyramid, cone, cylinder, sphere, wedge, frustums, segments, zones, sectors; the prismoidal formula; applications to problems in connection with the earth; lengths of open and crossed belts; Betz and Webb's Solid Geometry. Four hours per week.

**54. The Theory of Errors and Method of Least Squares.** The general principles of probability, the law of error, direct measurements of equal and different weights, mean square and probable errors, indirect measurements; conditioned observations; applications to empirical constants and formulae. One hour per week.

**55, 56. Analytical Mechanics.** Centres of gravity, moments of inertia, pressure and centres of pressure of fluids; statics of flexible cords, cords on rough surfaces; rectilinear and curvilinear motions; pendulums; projectiles; rotary motion; work and energy, friction; dynamics of rigid bodies; impact. Hancock, Applied Mechanics for Engineers, (Macmillan Co., New York). Arts and Science, two hours per week. Engineering, four hours per week, second term.

**57, 58. Analytical Mechanics.** Vectors, centroids, flexible cords, friction systems of particles and rigid bodies, equilibrium on a smooth or rough plane curve, skew curve or surface, centres of gravity, work, attraction and potential, stable and unstable equilibrium; velocity, acceleration, relative motion, rectilinear and curvilinear motion, motion in resisting media, law of gravitation, central orbits, constrained motion, pendulums, rotary motion, energy, dynamics of rigid bodies, impact. Theoretical Mechanics, Smith and Langley, (Ginn & Co.). Three hours per week.

**61, 62. Celestial Mechanics.** Curvilinear motion, central orbits, derivation of Newton's law; determination of the orbit from the law of force; potential and attraction of bodies; the problem of two bodies; the problem of  $n$  bodies; the problem of three bodies; Lagrangian straight line and equilateral triangular solutions of the three body problem, surfaces of zero relative velocity, etc.; geometrical and analytical consideration of perturbations. Moulton, Introduction to Celestial Mechanics, (Macmillan Co., New York). Three hours per week.

## ACTUARIAL SCIENCE

**71, 72. The Mathematical Theory of Investment.** Interest and discount; equation of payments; annuities certain; amortization of debts; amortization schedules; valuation of bonds, debentures and other securities; depreciation; building and loan associations; Mathematics of Finance by Rietz, Crathorne and Rietz, (Henry Holt & Co.). Institute of Actuaries' Text Book Part I. Two hours per week.

**73. Theory of Probability.** The general theory of probability; the mortality table; probabilities of life; expectations of life; survivorship probability; formulae for the law of mortality. Hall and Knight's Higher Algebra; Institute of Actuaries' Text Book, Part 11. Two hours per week.

**74. Principles of Life Insurance.** Life annuities; classification of policies; calculation of net premiums, loading, reserves; surplus, dividends, participating and non-participating policies; surrender values; policy

loans; policy contracts; actuarial selection of risks; substandard lives; fraternal and assessment insurance; industrial insurance; group insurance; governmental supervision. Two hours per week.

**76. Finite Differences.** A course of lectures on the Calculus of Finite Differences and the theory of operators. Fundamental difference forms, factorial expansions, symbols of operation, Herschel's and MacLaurin's Theorems, interpolation formulae, statistical applications, approximations, mechanical quadratures, finite integration, Euler-MacLaurin sum series (Lubbock's, Woolhouse's and Hardy's formulae), convergence, difference equations. Burn and Brown, *The Elements of Finite Differences*. Two hours per week.

**78. The Theory of Errors and Method of Least Squares.** See Applied Mathematics, Course 54.

### ASTRONOMY

**91, 92. General Astronomy.** The constellations; the telescope; systems of co-ordinates; problems of the earth; Kepler's laws; gravitation; tides; moon; eclipses; time; solar system; comets and meteors; sun; stars; nebulae; evolution of solar system; spectrum analysis. Moulton, *Introduction to Astronomy*, (Macmillan & Co., New York). Two hours per week lectures. One hour per week laboratory work or evening observations.

**93. Descriptive and General Astronomy.** A short course specially devoted to those parts of astronomy necessary in surveying. The shape and motions of the earth; the constellations; systems of co-ordinates; refraction; aberration; parallax, eclipses; time, equation of time, conversion of time. General Astronomy by C. A. Young (Ginn & Co., new edition). Two hours per week. Evening observations.

**96. Mathematical and Practical Astronomy.** The solution of the astronomical triangle; time; conversion of time; the ephemeris; determination for any date of the apparent places of stars from the star catalogues; corrections for refraction, parallax, diurnal aberration and dip, to be applied to observed co-ordinates; description and working principles of the sextant, transit theodolite, observatory transit, and zenith telescope; the errors of these instruments and methods of dealing with them; methods of determining latitude, time, longitude and azimuth; practical observations and their reduction. Two hours per week.

**97, 98. Celestial Mechanics.** See Applied Mathematics, Course 61, 62.

### GRADUATE COURSES

The following courses in graduate study will be offered from time to time. A selection will be made at the beginning of each session to meet the needs and qualifications of students desiring such work.

Theory of Functions of a Real Variable. *Professor MacLean.*

Elliptic Integrals and Fourier Series. *Professor MacLean.*

Calculus of Variations (Elementary Course). *Professor Wilson.*

History of Mathematics. *Professor Wilson.*

Theory of Functions of a Complex Variable. *Professor Wilson.*

Celestial Mechanics. *Assistant Professor Warren.*

An Advanced Course in Actuarial Science. *Assistant Professor Warren.*

Modern Analytical Geometry. *Mr. Nowlan.*

Advanced Theory of Conics. *Mr. Nowlan.*

Higher Plane Curves. *Mr. Nowlan.*

- First Pre-Medical Year: Course 11.
- Pre-Engineering Year Courses 1; 4; 5, 6; 9; 10.
- First Year, Arts: Required of all students, Courses 1; 4.  
Mathematics Option, Courses 5, 6; 7; 10.
- Second Year, Arts, Mathematics: Courses 13; 16.
- Second Year, Arts, Astronomy: Courses 91, 92.
- Third Year, Arts: Full Course\*: Courses 25, 26; 29, 30; 31; 44; 55, 56; 71, 72.  
Major and Minor: Courses 29, 30; and a selection from 25, 26; 31, 44; 55, 56; 71, 72.  
Div. A, Nat. and Phys. Science; Courses 29, 30; 55, 56.  
Div. B, Nat. and Phys. Science—Mathematics: Courses 29, 30; 55, 56.  
Div. B, Nat. and Phys. Science—Astronomy: Courses 31; 54; 91, 92.
- Fourth Year, Arts Full Course\*: Courses 37, 38; 39, 40; 57, 58; 73, 74; 76; 93; 96.  
Major: Course 39, 40; and a selection from Courses 37, 38; 57, 58; 71, 72; 73, 74; 76; 93, 96.  
Minor: A selection from Courses 37, 38; 39, 40; 57, 58; 71, 72; 73, 74; 76; 93; 96.  
Div. A, Nat. and Phys. Science: Courses 39, 40; 57, 58.  
Div. B, Nat. and Phys. Science—Mathematics: Courses 39, 40; 57, 58.  
Div. B, Nat. and Phys. Science—Astronomy: Courses 93; 96; 97, 98.  
Minor in Finance: Courses 71, 72; or 73, 74.
- First Year, Home Economics: Courses 1; 4.
- First Year, Pharmacy, Degree Course: Courses 1; 4; 5, 6.
- First Year, Science: Courses 1; 4; 5, 6.
- Second Year, Science—Mathematics I: Courses 7; 10; 13; 16.  
Mathematics II: Courses 7; 16.
- Third Year, Science—Mathematics: Courses 29, 30; 55, 56.  
Astronomy: Courses 31, 54; 91, 92; 93; 96.
- Fourth Year, Science—Mathematics: Courses 39, 40; 61, 62; balance to be outlined.
- First Year, Architecture: Courses 1; 4; 5, 6.
- Second Year, Architecture: Courses 17; 52.
- First Year, Engineering: Courses 17; 19; 20; 52; 93.
- Second Year, Engineering—Courses 21; 22; 31; 55, 56.
- Third Year, Civil Engineering: Courses 54, 96.
- Third Year, Electrical and Mechanical Engineering: Course 23.

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\*See pages 57 for Courses in Physics required of students taking the Mathematics Full Course.

## DEPARTMENT OF PHYSICS

Frank Allen, M.A., Ph.D., F.R.S.C.....	Professor
R. K. McClung, M.A., D.Sc., F.R.S.C.....	Assistant Professor
C. D. Miller, B.S., Ph. D.....	Assistant Professor
J. S. Abel, B.Sc. (C.E.).....	Demonstrator
A. S. Williams, B.Sc. (E.E.).....	Demonstrator
M. S. Hollenberg, M.A.....	Demonstrator
A. Hollenberg, B.A.....	Demonstrator

N.B.—For key to system of numbering courses, see page 4.

**\*1, 2. General Physics.** An introductory lecture course, illustrated by experiments, covering, in the first term, Mechanics, Hydrostatics and Heat, and, in the second term, Magnetism, Electricity, Radioactivity, Sound and Light. No text book is employed, but the ground is fairly well covered by Gage's Principles of Physics (Goodspeed). Three hours a week. *Professor Allen.*

**3, 4. General Physics (Practical).** A laboratory course to be taken by all students who take the lecture courses 1, 2. It is intended that the students shall acquire facility in the use of physical apparatus, in making records, and in computing results from the data obtained. A special laboratory note book must be kept by each student, which must contain complete details of all experimental work. The note book is necessary in order to obtain credit for the course. Text book, Laboratory Physics, (Milliken, Gale and Bishop). One practical period per week. *Assistant Professor Miller.*

**5, 6. Mechanics, Heat and Sound.** A more advanced course in which special attention is given to the derivation of formulae and the solving of problems. Three hours per week.

**7, 8. Electricity, Magnetism and Light.** This course is similar in character and method to Course 5, 6. *Professor Allen.*

**9, 10. General Physics.** A more advanced course than 1, 2, covering in the first term, Mechanics, Heat and Wave Motion, and in the second term, Magnetism, Electricity and Light. Prerequisites, courses 1, 2, and 3, 4. Text book, A Text Book of Physics, Duff. Three hours per week. *Assistant Professor Miller.*

**11, 12. Mechanics.** A course in Statics and Dynamics involving the fundamental principles, with special attention to their application to engineering problems. It is designed especially for Engineering students. Two hours per week. *Assistant Professor McClung.*

**13, 14. Heat, Light and Sound.** This course is similar in character and purpose to course 11, 12, with which it is taken concurrently. Two hours per week. *Assistant Professor McClung.*

**15, 16. Electricity and Magnetism.** A course similar in character and purpose to the two preceding courses. Two hours per week. *Assistant Professor McClung.*

**17, 18. Mechanics, Heat and Sound.** A laboratory course in the theory and methods of physical measurements. Students are to perform an extensive series of experiments, and the results of each experiment are to be presented in a suitable report. Whenever possible, graphical methods are to be used. It is highly desirable that students should have an elemen-

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\*Students in Arts intending to take any of the divisions of the special Course in Natural and Physical Science or the Special Course in Mathematics are strongly urged to elect this course in their First Year.



tary knowledge of Analytical Geometry and Calculus. One practical period of three hours per week for each student. *Assistant Professor McClung and*— — — — —

19, 20. **Electricity, Magnetism and Light.** A laboratory course similar in character and method to course 17, 18. One practical period of three hours per week for each student. *Assistant Professor McClung.*— — — — —

21, 22. **Mechanics, Heat, Light and Sound.** A laboratory course similar in character and method to course 17, 18, especially for Engineering Students. One practical period of three hours per week under the direction of Assistant Professor McClung.

23, 24. **Electricity and Magnetism.** A course similar to course 19, 20, especially for Engineering students. One practical period of three hours per week under the direction of Assistant Professor McClung.

25, 26. **Electrical Measurements.** This course comprises a more advanced study, both theoretical and practical, of electrical measurements, and is especially suited to students in Electrical Engineering. It will involve the use of electrical standards, quantitative measurements of capacity of condensers, self and mutual induction, magnetic induction and hysteresis, potentiometer measurements, high and low resistance and photometry. *Assistant Professor McClung.*

27, 28. **Electricity, Magnetism and Light.** A lecture course in which special emphasis is placed on basic facts and ideas, and on mathematical methods used in dealing with these subjects. Three hours per week.

29, 30. **Electricity, Light and Radio-Activity.** An advanced lecture course for the Fourth Year of the Science Curriculum. Four hours per week.

31, 32. An advanced general laboratory course for the Fourth Year Science Curriculum. The experimental work undertaken will be varied to meet the special needs of students as far as the resources of the department permit. Research problems may also be studied. Eight hours per week. *Professor Allen.*

33, 34. A lecture course in General Physics treating specially those principles which are of particular service in Medicine. This course is intended for students of the Second Pre-Medical Year. Two hours per week.

The laboratory and its equipment are available whenever possible to anyone desirous of engaging in original investigation in Physics.

#### TEXT BOOKS

A Text Book of Physics (Watson); General Physics (Crew); The Tutorial Physics; Gage's Principles of Physics (Goodspeed); General Physics for Students (Edser); Heat for Advanced Students (Edser); Light for Students (Edser); Electricity and Magnetism (Hadley).

First Pre-Medical Year:	Courses 1, 2; 3, 4.
First Year, Arts:	Courses 1, 2; 3, 4.
Second Year, Arts:	Courses 9, 10, and selected parts of Courses 17, 18, and 19, 20.
Second Pre-Medical Year:	Courses 33, 34.
Third Year, Arts:	General; Courses 1, 2; 3, 4. Mathematics; Courses 5, 6; 17, 18. Natural and Physical Science; Courses 5, 6; 17, 18.
Fourth Year, Arts:	Mathematics; Courses 7, 8; 19, 20. Natural and Physical Science; Courses 7, 8; 19, 20.

First Year, Science:	Courses 1, 2; 3, 4.
Second Year, Science:	Courses 9, 10; 17, 18.
Third Year, Science:	Courses 27, 28; 19, 20.
Fourth Year, Science:	Courses 29, 30; 25, 26; 31, 32.
Second Year, Pharmacy:	Courses 1, 2; 3, 4.
First Year, Pharmacy (Degree Course):	Courses 1, 2, 3, 4.
Second Year, Pharmacy (Degree Course):	Courses 9, 10, 17, 18.
First Year, Engineering:	Courses 11, 12, 13, 14; 21, 22.
Second Year, Engineering:	Courses 15, 16; 23, 24.
Third Year, Engineering (Electrical):	Courses 25, 26.
First Year, Architecture:	Courses 1, 2; 3, 4.
Second Year, Architecture:	Courses 11, 12; 13, 14.

### DEPARTMENT OF BOTANY

A. H. Reginald Buller, B.Sc., Ph.D., D.Sc., F.R.S.C.	Professor
H. F. Roberts, B.A., M.Sc., F.A.A.S.	Assistant Professor
C. W. Lowe, M.Sc.	Lecturer
Ida Kirk Scott, B.A.	Demonstrator

N.B.—For key of numbering courses, see page 4.

**1, 2. General Botany.** An introductory lecture course covering, among other topics, the following: Classification of objects; comparison of living and non-living matter; the differences between animals and plants. The structure of the seed and contents of its cells; the seeds of the pea, bean, castor oil plant, and date palm; the grains of wheat and corn; the conditions for germination, and the phenomena accompanying it; the exhaustion of the reserve food-stuffs. The seedling: its structure, mode of development and relations with external conditions; the theory of irritability; geotropism, heliotropism and hydrotropism; the further development of shoot and root. The general morphology of the plant body, and the principal modifications of the stem, leaf and root; buds, grass-haulms, stolons, runners, rhizomes, corms, tubers, bulbs, spines and thorns, tendrils, cladodes, phyllodes, compound leaves, etc.; the growing point of stems; the origin of new leaves and buds. The cell and the cell theory; protoplasm as the physical basis of life; protoplasmic movement; turgidity; the structure and division of the nucleus; the origin of new cells by cell division. The internal morphology of the stem of monocotyledons and of dicotyledons; the functions of vascular bundles; the cambium and the secondary thickening of stems and roots; the secondary protective tissues, cork and bark. The leaf as an organ for carrying on the process of photosynthesis; the epidermis, including hairs and stomata, vascular bundles, mesophyll, and intercellular spaces; photosynthesis (carbon assimilation); the nature and function of chlorophyll corpuscles and of chlorophyll; the evacuation of the products of photosynthesis and their ultimate fate. The root: its root-tip, root hairs, and mode of branching; the growing point. Climbing plants; stem-climbers and tendril climbers; the physiology of climbing; lateral geotropism, reactions to the stimulus of contact. The elementary facts in the nutrition of the plant; the nature and sources of the raw food materials; the necessary chemical elements and their mode of absorption; water cultures; the constitution of the soil; the transpiration current; transpiration; photosynthesis; the products of metabolism, to-

gether with their distribution, storage, and utilization; respiration contrasted with photosynthesis. Carnivorous plants; *Drosera*, *Utricularia*, *Sarracenia*, *Dionaea* and *Nepenthes*. The classification of plants, including the main sub-divisions of the vegetable kingdom; the morphology and physiology of the following *Thallophyta*: *Protococcus* (*Pleurococcus*), *Saccharomyces* (yeast), *Bacteria*, *Spirogyra*, *Fucus*, *Mucor*, *Penicillium*, *Psalliota campestris* (mushroom). Alcoholic fermentation; *Bacteria* as the cause of nitrogen fixation, of fermentative processes, of putrefaction, and of disease. The *Byrophyta*, illustrated by a moss plant; the *Pteridophyta*, illustrated by a fern plant; alternation of generations. Reproduction in the *Phanerogamia*; the flower and its chief modifications in structural plan; the minute structure of the pollen grain and of the ovule; Pollination and its agents; floral mechanisms as illustrated by the Lady Slipper Orchid, *Primula*, *Salvia*, etc. Fertilization of the ovule; development of seeds and fruits; the plum, strawberry, orange, cocoanut, etc.; dispersion of seeds and fruits; the nature of pine cones, both male and female. Two hours a week.

**3, 4. Laboratory Course in General Botany.** This course is designed to accompany course 1, 2. One practical period of two hours per week.

**3a, 4a. Laboratory Course in General Botany.** This course for students in Arts is designed to accompany courses 1, 2. One practical period of two hours fortnightly.

**5, 6. Morphology and Physiology of the Flowering Plant.** A lecture course of two hours per week.

**7, 8. Laboratory Course on Morphology and Physiology of the Flowering Plant.** One period of two hours per week.

**9, 10. Systematic Botany of the Cryptogamia and Phanerogamia.** A detailed treatment of the *Thallophyta*, *Bryophyta*, *Pteridophyta*, and the facts of reproduction on the *Phanerogamia*. A lecture course of three hours per week.

**11, 12. Laboratory Course in Systematic Botany.** This course is designed to accompany Course 9, 10. Five hours per week.

**14. Evolution and Inheritance.** A broad treatment of the doctrine of Evolution, Mendel's Laws of Inheritance, etc. One hour per week.

**15, 16. Special Courses.** Advanced lectures on Morphology, Physiology, Ecology, Palaeobotany, Inheritance, etc. Four hours per week.

**17, 18. Laboratory Course for Advanced Botany.** This course is designed to accompany Courses 14, 15 and 16. Nine hours per week.

**19. Genetics.** This course is designed to deal with the principles of genetics, especially in relation to plant life. It involves a study of the laws underlying inheritance, the causes of variation, and the physical basis of heredity. The practical features of plant breeding are dealt with in detail.

**20. Advanced Plant Physiology.** In this course, intended for those who have completed the Courses 7 and 8, special problems in plant physiology, e.g. osmosis, transpiration, photosynthesis, are assigned to each student.

First Pre-Medical Year:	Courses 1, 2; 3, 4.
Second Year, Arts:	Courses 1, 2; 3a, 4a.
Third Year, Arts:	Courses 5, 6; 7, 8.
Fourth Year, Arts:	Courses 9, 10; 11, 12.
Second Year, Science:	Courses 1, 2, 3, 4.
Third Year, Science:	Courses 9, 10, 11, 12; 14.

Fourth Year, Science:	Courses 15, 16; 17, 18, 19, 20.
First Year, Pharmacy:	Courses 1, 2; 3, 4.
Second Year, Pharmacy (Degree Course):	Courses 1, 2; 3, 4.
Third Year, Pharmacy (Degree Course):	Courses 9, 10, 11, 12, 14.

### TEXT BOOKS

Youngken: Pharmaceutical Botany; Sargent: Plants and their Uses; Bergen & Caldwell: Practical Botany; Strasburger: Text Book of Botany; Coulter, Barnes & Cowles: Text Book of Botany; R. C. Punnett, Mendelism; W. Lochhead, An Introduction to Heredity and Genetics.

At the beginning of the session there will be several excursions to the prairie, woods and river side for the purpose of studying the algae, fungi and flowering plants in relation to their environment. Students are recommended to acquaint themselves with the Canadian orders of flowering plants during the summer vacation. The most suitable flora is Gray's New Manual of Botany.

The laboratory of the Department will be open and encouragement will be given to any one desiring to carry on research on some botanical problem.

### DEPARTMENT OF GEOLOGY AND MINERALOGY

Robert C. Wallace, M.A., Ph.D., D.Sc., F.G.S., F.R.S.C. .... *Professor*  
 Justin S. De Lury, B.A. .... *Assistant Professor*  
 Edward M. Burwash, M.A., Ph.D. .... *Assistant Professor ad interim*

N.B.—For key to system of numbering courses, see page 4.

**1, 2. General Geology.** The more important minerals and rocks. Earth features and the forces that modify them. Structures seen in rocks. Rocks and the soil. Water supply. Ore deposits. Fossils and their meaning. Origin and age of the earth. Historical geology, in particular of Western Canada. Evolution of plant and animal life. Blackwelder and Barrows' Elements of Geology or Coleman and Parks' Elementary Geology.

**3, 4. Practical Demonstrations.** On minerals, rocks, and fossils, and in topographical and geological mapping. One hour a week.

**5, 6. Engineering Geology.** Similar in scope to course 1, 2, but with particular application to engineering problems, such as water supply, foundations, building stone, mining processes, and structural materials. Ries and Watson's Engineering Geology. Two hours a week.

**7, 8. Practical Geology.** Systematic examination of minerals by blowpipe and dry way tests. Identification of the commoner minerals and rocks. Mapping of geological sections. Identification of type fossils. Two hours a week.

**9. Elementary Mineralogy.** The crystalline and physical properties of minerals, in particular of the more soluble minerals. Methods of identification. Two hours a week.

**11, 12. Mineralogy and Crystallography.** Laws of crystallography Stereographic projection. Systems and classes. Optical properties. Classification and systematic study of minerals. Genetic relationships. Rogers' Introduction to the Study of Minerals. Two hours a week.

**13, 14. Practical Mineralogy and Crystallography.** Crystal drawing. Identification of crystal forms. Goniometric investigation of single crystal. Study and identification of minerals. Two hours a week.

**15, 16. Petrology.** Optical properties of rock-forming minerals under polarising microscope. Classification of rocks. The characteristics of the various rock families. Magmatic differentiation. Physicochemical laws governing the formation of igneous, metamorphic, and sedimentary rocks. Harker's Petrology. Two hours a week.

**17, 18. Practical Petrology.** Identification of rock-forming minerals under the microscope. Study and identification of rocks in thin sections, and in hand specimens. Preparation of thin sections. Quantitative estimation of rocks. Five hours a week.

**19. Economic and Mining Geology.** Nature and origin of ore deposits. Natural occurrence, methods of identification, and evaluation of the more important ores. Geological structure of chief ore-bearing regions in Canada. Mining processes. Three hours a week.

**20. Vertebrate and Invertebrate Palaeontology.** A study mainly of the invertebrates, and more especially of their hard parts. Classification, distribution, and geological range. Fossils of North America, and particularly of Western Canada. Wood's Palaeontology. Two hours a week.

**22. Practical Vertebrate and Invertebrate Palaeontology.** Preparation of material for study. Examination of collections of North American fossils. Three hours a week.

**23, 24. Advanced Economic Geology.** An exhaustive study of the genesis and mineralogy of ore deposits. The structural geology and petrography of the great mining districts of the world. Emmon's Principles of Economic Geology. Two hours a week.

**25, 26. Practical Advanced Economic Geology.** A practical study of map folios, ore suites and rock formations of some important mining fields. Field methods in economic work. Three hours a week.

**27, 28. Advanced Invertebrate Palaeontology.** A study of invertebrate fossils in more taxonomic detail than in Course 20, with special attention to phylogenetic relations and their application to a natural scheme of classification. Zittel's Textbook of Palaeontology, Vol. 1. Lectures two hours a week.

**29, 30. Practical Advanced Palaeontology.** Determination of fossil species involving a knowledge of the palaeontological literature of Canada and the United States. Study of a western fauna. Four hours a week.

**31, 32. Stratigraphic Geology.** Time relations of rocks as indicated by structure; Petrology and conditions of deposition of sedimentary rocks. Outlines of North American Stratigraphy. Physical and faunal history of the various periods. Principles of correlation. Palaeogeography. Lectures two hours a week.

**33, 34. Practical Stratigraphic Geology.** Chronological Interpretation of geological maps. Study of typical sedimentary rocks. Faunas of the various periods. Practice in correlation. Four hours a week.

**35, 36. Advanced Investigations and Research.** Students in the M.A. and M.Sc. courses, and the more advanced students in the fourth year of the B.Sc. course, will carry out, under direction, independent in-

vestigation on some field or laboratory problem. The laboratories are open all day for this purpose.

**37, 38. Geological Excursions.** During October, the earlier part of November, and the latter part of March, excursions will be conducted on Saturdays to places of geological interest in the neighborhood of Winnipeg. These excursions form an integral part of the class work.

**39, 40. Extension Evening Courses.** Courses are offered in all branches of Geology, Mineralogy, Ore-Deposits, etc. The nature of the courses, their duration, etc., are arranged by consultation with those interested. The courses are free, or nominal fees only are charged for a few courses.

**41, 42. Assaying.** A course on the determination of the precious metals in ores by means of the fire assay, for those students who are able to take such a course in addition to their regular work. A knowledge of elementary chemistry is prerequisite, and some acquaintance with minerals and rocks is desirable. Three hours a week.

N.B.—Students who intend to take Geology as a final subject should, if possible, spend their summers as student assistants under the Geological Survey of Canada.

### Additional Text-books Recommended

Text-book of Geology, Pirsson and Schuchert; Geology, Chamberlin and Salisbury; Handbook of Minerals, Butler; Crystallography, Williams, Determinative Mineralogy, Brush and Penfield; Practical Mineralogy, Rowe; Minerals and How they Occur, Miller; Palaeontology, Woods; Mineral Deposits, Lingren; Economic Geology, Ries; Metamorphic Geology, Leith and Mead; Manual of Petrographic Methods, Johannsen; Determination of Rock Forming Minerals, Johannsen; Quantitative Classification of Igneous Rocks, Cross, Iddings, Pirsson and Washington; Notes on Assaying, Lodge; Assaying, Fulton.

Second Year, Arts: Courses 1, 2; 3, 4.

Third Year, Arts: Natural and Physical Science, Div. A, C & D: Courses 1, 2 (if not already taken); 7, 8; 11, 12; 13, 14.

Fourth Year, Arts: General: Courses 1, 2; 3, 4.

Natural and Physical Science, Div. A, C & D: Courses 15, 16; 17, 18; 19 (optional).

Natural and Physical Science, Div. D. (Additional): Courses 20 and 22, with modified Courses 17, 18.

Graduates, Arts: Courses 23, 24; 25, 26 or (27, 28, 29, 30) and 35, 36

Second Year, Science: Courses 1, 2; 7, 8.

Third Year, Science: Courses 11, 12; 13, 14; 19; 20 and 22.

Fourth Year, Science: Courses 15, 16; 17, 18; 23, 24, 25, 26 or (27, 28, 29, 30, 31, 32, 33, 34.)

Third Year, Civil Engineering: Courses 5, 6, 7, 8.

First Year, Pharmacy (Degree Course): Course 9.

First Year, Pharmacy: Course 9.

## DEPARTMENT OF CHEMISTRY

Matthew A. Parker, B.Sc., F.I.C., F.C.I.C., F.R.S.C.....	<i>Professor</i>
Henry P. Armes, B.Sc., Ph.D., F.C.I.C.....	<i>Assistant Professor</i>
John W. Shipley, M.A., Ph.D., F.C.I.C.....	<i>Assistant Professor</i>
I. R. McHaffie, B.A., B.Sc.....	<i>Demonstrator</i>
Dorothy Mackay, B.A.....	<i>Demonstrator</i>
C. A. Merritt.....	<i>Demonstrator</i>
Catherine Morgan.....	<i>Demonstrator</i>

N.B.—For key to system of numbering courses, see page 4.

The following are among the lecture courses given. These are all illustrated by experiments.

**1, 2. Elementary Inorganic Chemistry.** Fundamental principles of chemistry; elements and compounds; laws of combination; atoms and molecules; acids, bases, salts; properties of some common elements and their more important compounds. The subject is treated in an elementary way. Textbook recommended, McPherson & Henderson's *An Elementary Study of Chemistry* (Ginn & Co.). Two hours per week lectures, and one hour tutorial, with laboratory work in addition.

**3, 4. Inorganic Chemistry.** Similar to course 1, 2, but more advanced, and deals with some of the more general subjects barely touched on in the more elementary course. Three hours per week, one hour tutorial, with laboratory work. Textbook recommended, Smith's *General Chemistry for Colleges* (Century Co.).

**5, 6. Medical Chemistry.** The subjects dealt with are selected with regard to their importance for medical students. About half of the course deals with inorganic and half with organic chemistry. Three hours per week lectures, with laboratory work. Textbooks recommended, Smith's *General Chemistry for Colleges* (Century Co.) and J. B. Cohen's *Theoretical Organic Chemistry* (Macmillan).

**7, 8. Organic Chemistry.** An introduction to the study of organic chemistry. General principles; fatty compounds; some typical carbocyclic and a few heterocyclic compounds. Two hours per week lectures. Textbooks recommended, Perkin and Kipping's, *Organic Chemistry*.

**9, 10. Electro-Chemistry.** Theories and laws relating to practical applications of electro-chemical processes. One hour per week. Textbook recommended, Allmand's *Principles of Applied Electro-Chemistry* (Longman's, Green & Co.).

**11, 12. Physical Chemistry.** Introduction to Physical Chemistry. Two hours per week lectures. Textbook recommended, Lincoln's *Textbook of Physical Chemistry* (Heath & Co.).

**13, 14. Advanced Organic Chemistry.** Subjects chosen with reference to literature available in the library. Two hours per week.

**15, 16. Advanced Inorganic Chemistry.** Chiefly descriptive inorganic chemistry; subjects chosen with reference to literature available in the library. Two hours per week.

**17, 18. Advanced Physical Chemistry.** A continuation of Course 11, 12. Two hours per week.

**19, 20. History of Chemistry.** A brief outline of the history of some of the more important discoveries and theories of chemistry. One hour per week throughout the session.



The following *laboratory* courses are offered:

**21, 22. Practical Chemistry I.** Experiments illustrating general principles and the preparation and properties of substances studied in course 1, 2. One period of three hours per week.

**25, 26. Practical Chemistry III.** Preparation of some substances not included in course 21, 22; quantitative experiments illustrating fundamental laws; qualitative analysis. Three periods of two hours per week.

**27, 28. Practical Chemistry IV.** Qualitative analysis; simple gravimetric and volumetric analysis; reactions of some organic substances; preparations. Two periods of three hours per week.

**29, 30. Practical Chemistry V.** Quantitative analysis leading up to methods of water analysis, coal analysis, etc., of interest to engineering students. One period of three hours per week.

**31, 32. Practical Chemistry VI.** Preparation of organic compounds; quantitative inorganic analysis. Two periods of three hours per week.

**33, 34. Practical Chemistry VII.** Qualitative inorganic analysis; quantitative analysis; preparation of organic compounds. Three periods of three hours per week.

**35, 36. Practical Chemistry VIII.** Physico-chemical measurements.

**37, 38. Practical Chemistry IX.** Methods of organic analysis; organic preparations.

**39, 40. Practical Chemistry X.** Methods of inorganic analysis; inorganic preparations.

Special students may be enrolled for the purpose of carrying on such advanced work as the equipment permits of, and special facilities will be given to those capable of engaging in research work.

Each student is supplied with such apparatus as may be required, with the exception of platinum wire and foil, laboratory towel, etc., which he must provide for himself.

A deposit of five dollars is paid to the Registrar at the beginning of each session, and all breakages will be made good out of this.

A record of all laboratory work must be kept in regulation report books. These are examined periodically during the session, and must be handed to the examiners in chemistry previous to the practical examination for the degree.

Attention is called to the regulation regarding practical work and reports on pages 91 and 92.

Pre-Engineering Year:	Courses 1, 2; 21, 22.
First Pre-Medical Year:	Courses 1, 2; 21, 22.
First Year, Arts:	Courses 1, 2; 21, 22.
Second Year, Arts:	Courses 1, 2; 21, 22.
Third Year, Arts:	Courses 3, 4; 25, 26.
Fourth Year, Arts:	Courses 7, 8; 11, 12; 33, 34.
First Year, Science:	Courses 3, 4; 21, 22; 25, 26.
Second Year, Science:	Courses 7, 8; 31, 32.
Third Year, Science:	Courses 7, 8; 11, 12; 33, 34.

Fourth Year, Science:	Courses 19, 20; two of 13, 14; 15, 16; 17, 18; and 35, 36; and one of 37, 38; 39, 40.
Second Pre-Medical Year:	Courses 5, 6; 27, 28.
First Year, Pharmacy:	Courses 1, 2; 21, 22.
Second Year, Pharmacy:	Courses 5, 6; 27, 28.
First Year, Pharmacy (Degree Course):	Courses 1, 2; 21, 22.
Second Year, Pharmacy (Degree Course):	Courses 3, 4; 25, 26.
Third Year, Pharmacy (Degree Course):	Courses 7, 8; 11, 12; 33, 34.
First Year, Engineering:	Courses 29, 30.
Fourth Year, Engineering (Electrical):	Courses 9, 10.

### DEPARTMENT OF BIOCHEMISTRY

A. T. Cameron, M.A., B.Sc., F.I.C., F.C.I.C., F.R.S.C.....*Associate Professor*  
 N.B.—For key to system of numbering courses, see page 4.

1, 2. **Elementary Biochemistry.** The general chemistry of animal and plant tissues. Enzyme action. The composition of food-stuffs; proteins, fats, carbohydrates, vitamins, etc. Composition of the digestive juices. Digestion of food-stuffs. Absorption of the products of digestion. Chemistry of blood; haemoglobin and its derivatives. Chemistry and physical chemistry of respiration. Secretion of urine, etc. Chemistry of the excreta. Textbooks: Hawk's *Practical Physiological Chemistry* (Blakiston, Philadelphia), Robertson's *Principles of Biochemistry* (Lea & Febiger, Philadelphia and New York), and, for reference, Mathew's *Physiological Chemistry* (Wood, New York). One lecture a week, both terms.

3, 4. **Advanced Biochemistry.** Metabolism. Assimilation of food units (glucose, amino-acids, fats, etc.) in the body. Catabolism. Types of inanition. Chemistry of the endocrine glands. Muscle metabolism and the production of energy. Abnormal metabolism of glucose, uric acid, creatine, etc.; acidosis. Energy requirements of the body. Heat maintenance. Diet. The importance of vitamins and other minor factors of a diet. Physical chemistry of living processes. Textbooks: as for the course in Elementary Biochemistry. Reference books as directed during the course. One lecture a week, both terms.

5, 6. **Elementary Practical Biochemistry.** Detection of the elements in animal and plant tissues. Study of enzyme action. Properties of carbohydrates, fats, and proteins, and their derivatives. Methods of estimation of sugars, fats, amino-acids, etc. Study of the digestive juices and their action. Composition of foodstuffs, etc. Text book: Hawk's *Practical Physiological Chemistry* (Blakiston, Philadelphia). Reference books: Plimmer's *Practical Organic and Biochemistry*, (Longmans, London and New York) and Onslow's *Plant Biochemistry* (Cambridge University Press). One three-hour period, both terms.

7, 8. **Advanced Practical Biochemistry.** Experiments on muscular and nervous tissue and on blood. Blood analysis. Oxygen capacity, respiratory quotient, acidosis. Composition of normal and pathological urine. Study of a simple problem in metabolism. Text books: as for the

course in Elementary Practical Biochemistry. One three-hour period, both terms.

**9, 10. Advanced Laboratory Courses.** Will be given as required in connection with the Fourth year work for the B.Sc. degree. The laboratories are open daily from 9 a.m. to 6 p.m. (and, by arrangement, till 11 p.m.) for the prosecution of original research.

**Breakages.** A deposit of \$5.00 is paid to the Registrar at the beginning of each session, and all breakages will be made good from this.

Third Year, Science:	Courses 1, 2; 5, 6.
Fourth Year, Science:	Courses 3, 4; 7, 8; 9, 10.

## DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY

V. H. K. Moorhouse, M.C., B.A, M.B.—*Professor and Director of Department*  
 ..... *Assistant Professor*

N. B.—For key to system of numbering courses, see page 4

**2. An Introduction to Physiology and Pharmacology.** A course of lectures with demonstrations dealing with the chief parts of the body and their main functions; general plan of the nervous system; reflex action; supporting and muscular tissues; general structure and physiology of organs of circulation, respiration, digestion, excretion, ductless glands, and special senses. The physiological action of drugs as exerted on the functions of the tissues and organs dealt with. One lecture a week, second term.

**9, 10. Elementary Physiology.** (For students in second year Medicine and third year Science.) Structure and functions of the cell and of the simple tissues. General Physiology. Physiology of muscle and nerve. Physiology of digestion. The circulation of blood and lymph. General mechanics of respiration. Structure and function of the kidneys, skin, etc. Textbooks, any one of Howell, Textbook of Physiology (W.B. Saunders, Philadelphia); Starling, Human Physiology (A. Churchill); Flack and Hill, Textbook of Physiology (Arnold, London). One lecture a week, both terms (Mondays, 2 p.m.). In addition tutorial work will be arranged for Wednesday afternoons.

**11, 12. Advanced Physiology.** (For students in third year Medicine and fourth year Science.) Internal secretion of the ductless glands. The nervous system. The special senses, voice and speech. Physiology of reproduction, etc. Textbooks, as for the elementary course. Reference books, as directed throughout the course. Students at the end of their second year in Physiology will be expected to show a competent knowledge of both years' work. One lecture a week, both terms (Tuesdays, 2 p.m.).

**13. Elementary Practical Physiology.** (For students in second year Medicine and third year Science). Simple experiments in muscle-nerve physiology, graphic records, effects of varying conditions on muscular contractions, the beat of the heart and its nervous control, perfusion through blood-vessels, reflex-action, etc. Textbook, Schafer's Experimental Physiology (Longman's 1918 edition). One three-hour period throughout both terms. (Two groups, Mondays or Wednesdays, 3 to 6 p.m.).

**14. Advanced Practical Physiology.** (For students in third year Medicine and fourth year Science). Some of the more difficult experiments of the elementary course repeated and studied in greater detail, galvanometry, blood pressure, ophthalmoscope, laryngoscope, physiological and psychological experiments upon the special senses, etc. Textbook, Burton-

Opitz, Practical Physiology (W. B. Saunders Co., Philadelphia). One three-hour period throughout both terms, (two groups, Tuesdays or Thursdays, 3 to 6 p.m.).

19, 20. **Advanced Laboratory Courses** are given in connection with the fourth year work for the B.Sc. degree. The laboratories are open daily from 9 a.m. to 6 p.m. (and by arrangement till 11 p.m.) for the prosecution of original research. Application is to be made to the Professor.

21, 22. **Pharmacology.** Lectures, tutorials and experimental work (two three-hour periods per week during the two terms). Study of pharmacodynamical action of related chemical compounds and other drugs. Study of groups of drugs producing similar pharmacological actions. Textbooks, Cushny, Pharmacology and Therapeutics (Lea and Febiger). Reference, Sollman, Manual of Pharmacology (Saunders); Jackson, Experimental Pharmacology (C. V. Mosby, St. Louis), etc.

**Breakages.** A deposit of \$5.00 is paid to the Registrar at the beginning of each session, and all breakages will be made good from this. See page 107.

### Physiological Research Prize

A fund has recently been raised among medical men and others interested in Physiology, and will be devoted to providing annually, or at longer intervals, a prize for original investigation carried out in the Physiology Department. The following regulations govern the award of the prize:

- (1) The prize shall be called "The Physiological Research Prize."
- (2) The prize shall be awarded annually or biennially, or may be withheld at the discretion of the Committee (*vide infra*).
- (3) The interest on the money invested shall be utilized to provide a medal and a money prize for the report on an original investigation, which shall be deemed by the Committee to be of the greatest merit.
- (4) The essay submitted must in each case contain an account of original investigation carried out wholly or in part in the Department of Physiology and Physiological Chemistry of the University of Manitoba.
- (5) The subject of the investigation shall be some branch of Physiology or some allied medical or biological subject, and shall be approved by the Committee before the work is commenced.
- (6) Work carried out in conjunction with another investigator or results published conjointly with another author may be submitted by a candidate for the prize. In such cases the Committee will take into consideration the part actually taken by the candidate in the work done. Further in such cases, the candidate must send in an account of the results obtained in the form of an essay, which must be his own unaided composition.
- (7) Registered students of the University of Manitoba and members of the staff other than professors or lecturers shall be eligible to compete.
- (8) Medical practitioners shall be eligible to compete on registration as students of the University.
- (9) The duty of awarding the prize shall be delegated to a committee consisting of the Professor of Physiology and two others selected annually by the University Council.
- (10) Essays must be in the hand of the Registrar before April 30th of each year.

Third Year, Science:	Courses 9, 10; 13.
Fourth Year, Science:	Courses 11, 12; 14.
Second Year, Pharmacy:	Course 2.
Graduate:	Courses 19, 20.

## DEPARTMENT OF ZOOLOGY

Chas. H. O'Donoghue, D.Sc., F.Z.S.	Professor
C. F. Curtis Riley, M.A., M.S.	Assistant Professor
Eileen Bulman, M.A., B.Sc.	Lecturer
	Fellow

**1, 2. Junior Course in Zoology.** A course of lectures dealing with the general principles of zoology; the outlines of the morphology and anatomy of a progressive series of animal types, mainly invertebrate with some work on the frog if time permits; the elements of animal physiology, cytology, histology and bionomics; the principal phenomena of reproduction, behaviour, ecology, development and life histories; an introduction to the principles of evolution, heredity and variation. Arranged for second year Arts and Science students. Text book: Hegner, College Zoology. Two hours per week.

**3, 4. Junior Course in Practical Zoology.** A course of laboratory exercises and experiments to accompany and illustrate the foregoing, providing a general introduction to zoological laboratory methods. Two hours alternate weeks for Arts students; two hours per week for Science students.

**5. Elementary Course in Zoology.** A general account of the frog treated as an introduction to the anatomy, physiology and histology of a vertebrate type. Adapted for First Year Pharmacy students.

Text book: O'Donoghue, Introduction to Zoology. Two hours per week.

**6. Zoology for First Pre-Medical Year.** A course of lectures dealing with the morphology and anatomy of a progressive series of invertebrate animals; the elements of animal physiology, histology and cytology; the main phenomena of reproduction; development and life cycles. The course is preparatory to subsequent work. Textbook: O'Donoghue, Introduction to Zoology. Two hours per week.

**7. Elementary Course in Practical Zoology.** A series of practical exercises intended to accompany the preceding lecture course. Two hours per week.

**8. Practical Zoology for First Pre-Medical Year.** Practical classes to accompany the preceding lecture course. Two and a half hours per week.

**9, 10. Zoology for Second Pre-Medical Year.** A course of lectures dealing with the anatomy and physiology of a progressive series of animal types (mainly vertebrate); the elements of animal histology and cytology; the main phenomena of reproduction; development and life histories and an elementary treatment of evolution, heredity and variation.

Text book: O'Donoghue, Introduction to Zoology.

**11, 12. Practical Zoology for Second Pre-Medical Year.** A course of laboratory work to accompany the foregoing, providing an introduction to general zoological methods. Five and a half hours per week.

**13, 14. Comparative Anatomy of the Chordata.** A general account of the structure and classification of the Chordata including the evolution of the main groups. Parker and Haswell's Textbook of Zoology. Two hours per week.

**15, 16. Practical Course in the Comparative Anatomy of the Chordata.** A laboratory course accompanying the above and illustrating the salient features of the anatomy, osteology and histology of the Chordata. Six hours per week.

**17, 18. Comparative Anatomy of the Invertebrata.** A general account of the structure and classification of the Invertebrata including larval forms and the light they throw on the relationships of the various groups. Parker and Haswell's Textbook of Zoology. Two hours per week. (Not given in 1922-23).

**19, 20. Practical Course in the Comparative Anatomy of the Invertebrata.** A laboratory course accompanying the above and illustrating the salient features of the gross morphology, anatomy and histology of the Invertebrata. Six hours per week. (Not given in 1922-23).

**21. Animal Ecology.** A course treating of the relations of animals to the various organic and inorganic factors of their habitat and environment. Such problems as the influence of light, temperature, moisture, gravity, water currents, etc., will be considered. Planned for third and fourth year Science students. One seminar or lecture per week.

**22. Animal Behaviour.** A course treating of the simpler forms of animal responses, such as tropisms, reflexes, habits and instincts, with some attention given to intelligent acts. The viewpoints of such men as Loeb, Jennings, Lloyd Morgan, Lewis, Mills, Thorndyke, Bohn will receive consideration. One seminar or lecture each week.

**23. Animal Ecology Practical Course.** A series of field excursions (if possible) and laboratory exercises to accompany and illustrate the foregoing lectures. Three hours per week.

**24. Animal Behaviour, Practical.** A series of practical exercises to illustrate the preceding lectures.

**25. Embryology of the Vertebrata.** The outlines of the embryology of the higher Chordata studied in a series of selected types. One hour per week.

**27. A Practical Course in the Embryology of the Vertebrata.** A laboratory course accompanying the above, providing an introduction to embryological technique and an opportunity of studying series of preparations. Three hours per week.

**28. Zoogeography.** The division of the land masses of the world into regions according to the animals they contain. The distribution of the main groups, and the animals characteristic of the various divisions. The factors encouraging and limiting dispersal; former land connections, continuous areas, barriers, human interference, etc. One hour per week.

**29, 30. Advanced Studies.** Students in the fourth year of the Science course will be given opportunities for further reading and practical work including the carrying out of independent investigations. Hours by arrangement.

**Research.** Encouragement will be given to anyone wishing to conduct research and such equipment as is present in the laboratories and library will be available.

**Text Books.** Advice regarding special text books, reference books and books for supplemental reading will be given in the various senior classes.

First Year, Pharmacy:	Courses 5, 7.
First Pre-Medical Year:	Courses 6, 8.
Second Pre-Medical Year:	Courses 9, 10, 11, 12.
Second Year, Arts:	Courses 1, 2, 3, 4.
Third Year, Arts:	Courses 13, 14, 15, 16.
Fourth Year, Arts:	Courses 13, 14, 15, 16.

Third Year, Science:  
Fourth Year, Science:

Courses 13, 14, 15, 16, 21, 23, 28.  
Courses 13, 14, 15, 16, 21, 23, 28.

*Note 1*—Students cannot enter upon the Third Year course in Zoology without having taken one of the junior courses.

*Note 2*—In the event of changing courses:

(a) Second Year Science will be considered the equivalent of the First Pre-medical year.

(b) First Pre-medical Year will be considered the equivalent of the second term of either Second Year Arts or Science.

(c) In the case of a student not proceeding with Zoology the First Pre-medical Year may be considered the equivalent of Second Year Arts.

## MECHANICAL DRAWING

See Courses 1, 2 under Department of Civil Engineering in Engineering Calendar, of which the following is an outline:

1, 2. **Mechanical Drawing.** Use of instruments; geometrical problems; elementary principles of orthographic, oblique and axonometric projections; the application of such principles to the solution of problems relating to straight lines and planes; intersections and developments; plans, elevations and sections of solids; simple structural details and machine parts; bolts, screws, keys and rivets; sketches and working drawings of machine pieces; isometric drawing; lettering, shade lines and line shading. Lectures, one hour per week, practical work 6 hours per week, both terms. Text book: "Engineering Drawing," by T. E. French. *Assistant Professor Moffatt.*

3, 4. **Freehand Drawing.** (Course to be outlined.)

## HEBREW

(Instruction in Hebrew is provided only in the affiliated Colleges.)

### *Language and Literature*

1. **Hebrew Language.** Genesis, chapters 1-8, including the fundamental principles of the language, the acquisition of a vocabulary and simple translation into Hebrew. Harper, *Elements of Hebrew and Introductory Hebrew Method*, Lessons 1-16 inclusive. Four hours.

2. **Hebrew Language.** Continuation of Course 1. Harper, *Introductory Hebrew Method*, Lessons 17-31 inclusive. Four hours.

3. **Hebrew Language.** Review of Courses 1 and 2 and Harper, *Introductory Hebrew Method*, Lessons 30-41 inclusive; Syntax, Davidson. Four hours.

4. **Hebrew Language.** Review of Courses 1, 2 and 3, and Harper, *Introductory Hebrew Method*, Lessons 41-50, inclusive and the *Book of Ruth*; Syntax, Davidson. Four hours.

5. **Historical Hebrew.** Texts, Hebrew Bible (Kittel R. *Biblia Hebraica*) II Samuel, Chaps. 1-18; Syntax, Davidson, Century Bible. A. R. S. Kennedy, I and II Samuel. Two hours.

6. **Legal Codes.** Texts, Hebrew Bible (Kittel R. *Biblia Hebraica*) Exodus, Chapters 19-24 and 34, Deuteronomy, Chapters 5 and 6; Syntax, Davidson, Cambridge Bible, G. A. Smith, Deuteronomy. Two hours.

7. **Prophetic Literature.** Texts, Hebrew Bible (Kittel R. *Biblia Hebraica*) The Book of Amos; Syntax, Davidson, Cambridge Bible, Driver, (Joel and Amos). Two hours.

8. **Prophetic Literature.** Texts, Hebrew Bible (Kittel R. *Biblia Hebraica*) Jeremiah, Chapters 1, 2, 9, 10, 13, 23-27; Syntax, Davidson, Century Bible, A. S. Peake, Jeremiah. Two hours.



9. (a) **Poetic Literature.** Texts, Hebrew Bible, (Kittel R. Biblia Hebraica), Psalms, 24, 29, 39, 51, 103, 124, 125, 126, 137, 139, 149; Syntax, Davidson; Century Bible, Psalms, Vol. 1, W. T. Davidson, Vol. 2, W. W. Davies. One hour.

(b) **Wisdom Literature.** Texts, Hebrew Bible (Kittel R. Biblia Hebraica) Ecclesiastes, Chapters 1-3, 10-13, Syntax, Harper or Davidson; Century Bible, G. Currie Martin, Proverbs, etc. One hour.

10. (a) **Hebrew Song and Story.** Texts, Hebrew Bible (Kittel R. Biblia Hebraica), Lamentations, chapter 5; Song of Solomon, chapters 1, 2, 6; Esther, chapters 4, 5, 6, 7; Syntax, Harper or Davidson; Century Bible; A. S. Peake, Jeremiah and Lamentations; G. C. Martin, Proverbs, Ecclesiastes, Song of Solomon; T. W. Davies, Ezra; Nehemiah, Esther. One hour.

10 (b) **Apocalyptic Literature.** Texts: Hebrew Bible (Kittel R. Biblia Hebraica); Daniel, Chapters 1, 8, 10-12; Syntax, Harper or Davidson; Cambridge Bible; Driver, Daniel. One hour.

*N.B.*—In courses 3-10 (b) inclusive students will be examined in all such syntactical points arising out of the text read as are contained in the Index of Passages at the end of Davidson's Syntax.

### *History*

11. (a) **History.** A general survey from prehistoric times to the establishment of the Monarchy. A syllabus of lectures to be supplied to students. Two hours.

(b) **Early History of Syria and Palestine.** Text: Paton, History of Syria and Palestine, Chapters 1-9. Two hours.

12. (a) **The Hebrew Commonwealth from the Monarchy to 586 B.C.** A Syllabus of lectures to be supplied to students. Two hours.

(b) **From the Establishment of the Monarchy to the Fall of the Persian Empire.** Text: Paton, Chapter 10; Kent, The Divided Kingdom; The Babylonian; Persian and Greek Periods, 1-267. Two hours.

13. **From 586-165 B.C.** A Syllabus of lectures to be supplied to students. Two hours.

### *Introduction*

14. **Pentateuch and Historical Books.** A. S. Geden, Introduction to the Hebrew Bible, Chapters 1-5; and G. B. Gray, Critical Introduction to the Old Testament, Chapters 1-12. Two hours.

15. **Prophetic, Poetic and Wisdom Literature.** G. B. Gray, Critical Introduction, Chapters 13-24. Two hours.

16. (a) **Archaeology.** G. A. Barton, Archaeology and the Bible. Chapters 1-13. One hour.

(b) **Historical Geography.** G. A. Smith, Chapters 2, 3, 6, 7, 8, 10, 13, 16, 24. One hour.

### *Religion and Ethics*

17. (a) **Religion and Ethics.** Kent, Social Teaching of Jesus and the Prophets; Marti, Old Testament Religion. Two hours.

(b) **Religion and Ethics.** A Syllabus of lectures to be supplied to students. Texts: W. R. Smith, Semitic Origins; H. P. Smith, Old Testament Religion. Two hours.

**18. Post Exilic Religion.** A Syllabus to be supplied to students. Texts: H. P. Smith, Religion of Israel; G. A. Smith, The Book of the Twelve; Cheyne, Jewish Religions; Life after the Exile. Two hours.

First Year:	Courses 1 and 2.
Second Year:	Courses 3 and 4.
Third Year (Major)	Courses 5, 7, 11(a) or 11(b), 14; 6, 8, 10(a) and (b), 12(a) or 12(b).
Fourth Year (Major):	Courses 5, 7, 9(a) and (b), 14, or 5, 7, 14, 17(b); 6, 8, 15, 16(a), 16(b), or 6, 8, 15, 18.
Third Year (General):	Courses 5, 6, 11(a), or 11(b), 12(a), or 12(b),
Fourth Year (General):	Courses 7, 8, 14, 15.

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## SCRIPTURE

*Instruction in Scripture is provided only in the affiliated Colleges.*

**1. Old Testament Scripture.** Minor Prophets as contained in the Century Bible, Volume 2. Driver.

Collateral reading—Book of the Twelve, Dr. George Adam Smith, Vol. II.

**2. New Testament Scripture.** Pauline Epistles (Westminster New Testament); Paul, the Traveller and Roman Citizen (Ramsay).

Third Year, Arts: General: Courses 1, 2.

Fourth Year, Arts: General: Courses 1, 2.

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## ICELANDIC

*Instruction in Icelandic is provided only in Wesley College.*

N.B.—For key to system of numbering courses, see page 4.

**1, 2. Grammar.** Finnur Jónsson, Málfræði. First term, pp. 54-85. Second term, pp. 85-142. One hour a week.

**3, 4. Authors.** Laxdaela Saga. First term, cc. 1-39 (pp. 1-116). Second term, cc. 40-88, (pp. 117-266). Three hours a week.

**5, 7. Authors.** With grammar in conjunction. (a) Gunnlaugs Saga, Ormstungu. (b) Sæmundar Edda (F. Jónsson), pp. 87-107. Four hours a week.

**6, 8. Authors.** With grammar in conjunction. (a) Sæmundar Edda (F. Jónsson), pp. 1-58, 137-160, 169-173. (b) History of Icelandic literature (F. Jónsson), pp. 63-91. Four hours a week.

First Year, Arts: Courses 1, 2, 3, 4.

Second Year, Arts: Courses 5, 6, 7, 8.

## SOCIOLOGY

*(Instruction in Sociology is offered only in the affiliated colleges.)*

1, 2. **Sociology.** Character and Scope of Sociology, and its relations to Biology and Psychology, to History and to the various social sciences. Methods of Investigation. History of Sociology. The Social Forces, or the Dynamic Element in Society: Preservative, Reproductive, Aesthetic, Emotional, Intellectual. Direction and Control of the Social Forces. Forms of Association. Processes of Adjustment. Theory of Social Progress. Socialization of Achievement. Text books: Ellwood, "Sociology in its Psychological Aspects;" Carver, "Sociology and Social Progress." Other works recommended: Giddings "Principles of Sociology;" Spencer, "The Study of Sociology;" Bagshot, "Physics and Politics;" Muller-Lyer, "History of Social Development;" E. Durkheim, "Les Règles de la Méthode Sociologique;" J. Q. Dealey, "Sociology, its Development and Applications."

3, 4. **Applied Sociology.** Social Institutions: Family, Church, State, Education as a part of the Social Heritage, Voluntary Associations, etc. Population, its Growth and Distribution. Immigration and Racial Problems. Social Pathology: Mental Deficiency, Juvenile Delinquents; Crime; Poverty, and the problems to which it gives rise. Social Improvement. Text books: Ellwood, "Sociology and Modern Social Problems;" Wolfe, "Readings in Social Problems" (the applied part). Other works recommended: Lester F. Ward, "Applied Sociology;" W. G. Sumner, "Folkways;" Helen Bosanquet, "The Family;" Barth, "Die Philosophie der Geschichte als Soziologie," Vol. I; A. W. Small, "General Sociology."

Third Year, Arts (Minor): Courses 1, 2.

Fourth Year, Arts (Minor): Courses 3, 4.

## PHILOSOPHY (LATIN)

*(Instruction in Latin Philosophy is provided only in St. Boniface College)*

N.B.—For key to system etc. of numbering courses, see page 4.

### THIRD AND FOURTH YEARS

1922-23 and every alternate year.

1, 2. **Philosophia Moralis.** First term: Generalia Morum Principia, Actus Humani, Lex Naturalis, Hominis Officia et Jura, Jus Proprietatis, Societas Domestica. Second term: Auctoritas, Societas Civilis. Nine hours a week.

3, 4. **Lacordaire, Economie providentielle de la Réparation.** Félix, Le Progrès par la Famille. Une heure par semaine.

3a, 4a. **Rickaby, Ethics, Natural Law, the Family, the State.** Husslein, Social Problems. One hour a week.

5. **Principes d'Éducation Religieuse.** Schoupe: Cours de Religion. Une heure par semaine.

6. **Psychologie de la Conduite Humaine.** Prunel: Cours Supérieur de Religion. Une heure par semaine.

7, 8. **Vallet, Histoire de la Philosophie**, pages 415-546. Premier terme: Philosophie Moderne, 17e siècle. Second terme: 18e et 19e siècle. Une heure par semaine.

7a, 8a. **Turner, History of Philosophy**, pages 324-660. First term: Third period of Scholastic Philosophy. Modern Philosophy to Kant. Second term: From Kant to our time. One hour a week.

9, 10. **Hervé-Bazin, Economie Politique**, Production, Echange, Répartition, Consommation. Second terme: Cathrein, Le Socialisme, sa nature, ses vices radicaux. Une heure par semaine.

9a, 10a. **Burke, Political Economy**. Production, Exchange, Money, Banking, Trade, Consumption. Second term: Cathrein-Gettelmann, Socialism, its Nature, Development, Fundamental Tenets, Impracticability. One hour a week.

11, 12. **Chimie**. Principes élémentaires; éléments et composés; lois des combinaisons; atomes et molécules; acides, bases, sels; propriétés des éléments les plus connus et de leurs principaux composés; principes de l'analyse chimique des sels; introduction à la chimie organique. Quatre heures par semaine.

11a, 12a. **Chemistry**. Fundamental principles of chemistry; elements and compounds; laws of combination; atoms and molecules; acids, bases, salts; introduction to organic chemistry. Four hours a week.

13, 14. **Practical Chemistry**. Experiments illustrating general principles and the preparation and properties of substances studied in lectures. One period of three hours per week.

15. **Zoology**. General principles of Zoology. An introduction to Anatomy, Histology, Cytology and Physiology of Animals. The Frog: Skeletal System, Muscular System, Alimentary System, Respiratory System, Circulatory System, Urinogenital System, Nervous System and Sense Organs. Protozoa, Coelenterata, Coelomata invertebrata. Two hours a week.

Text-Book: O' Donoghue, An Introduction to Zoology.

17. **Practical Zoology**. A course of Laboratory work to accompany the foregoing, providing an introduction to zoological methods. Two hours a week.

18. **Human Anatomy and Physiology**. Skeleton, Bones, Tissues, Respiration, Nutrition, Digestion, Circulation, Excretion, Nervous System and Sense-organs. Two hours a week.

Text Book: Martin, Human Body.

Third and Fourth Year, Arts: Latin Philosophy (French-Speaking students): Courses 1, 2; 3, 4; 5, 6; 7, 8; 9, 10; 11, 12; 13, 14; 15; 17, 18.

Third and Fourth Year, Arts: Latin Philosophy (English-Speaking students): Courses 1, 2; 3a, 4a; 7a, 8a; 9a, 10a; 11a, 12a; 13, 14; 15; 17, 18.

*1923-24 and every alternate year.*

1, 2. **Philosophia Scholastica.** First term: Logica, Ontologia, Cosmologia. Second term: Psychologia, Theodicea. Nine hours a week.

3, 4. **Monsabré.** Oeuvre de Dieu (Conférences, 1875). Une heure par semaine.

3a. **Gerard.** The Old Riddle and Newest Answer. One hour a week.

4a. **Maher, Psychology.** One hour a week.

5. **Histoire de la Réligion.** Cauly: Histoire de l'Église. Une heure par semaine.

6. **Programme de l'Education Religieuse.** De la Vaissiere: Psychologie Pédagogique. Une heure par semaine.

7, 8. **Histoire de la Philosophie.** Vallet, pages 1-310. Premier terme: Philosophie orientale, grecque, romaine, alexandrine, Philosophie des Pères. Second terme: Philosophie Scolastique, Philosophie de la Renaissance. Une heure par semaine.

7a, 8a. **History of Philosophy.** Turner, pages 1-323. First term: Oriental, pre-Socratic, Socratic and Aristotelian Philosophy. Second term: Post-Aristotelian, Graeco-Oriental, Patristic and Scholastic Philosophy. One hour a week.

9, 10. **Physique.** Premier terme: Notions de Mécanique, Hydrostatique, Pesanteur, Chaleur. Second terme: Acoustique, Optique, Electricité et Magnétisme. Quatre heures par semaine.

9a, 10a. **Physics.** First term: Statics, Hydrostatics, Heat. Second term: Sound, Light, Electricity and Magnetism. Four hours a week.

11, 12. **General Physics (Practical).** The students perform a series of experiments to illustrate the theoretical principles studied in the lectures. Two hours a week.

13, 14. **Botany.** Division of Sciences: Comparison of living and non-living beings; differences between animals and plants, plants and minerals. Classification of plants. Cells, tissues, seeds, roots, stems (primary and secondary growth). Buds, leaves, flowers, fruits. Types of Cryptogams. Two hours a week.

Text Books: Bergen, Elements of Botany; Dalbis, Anatomie et Phys. végétales.

15, 16. **Laboratory Course in General Botany.** Two hours a week.

18. **Astronomie Élémentaire.** La terre et ses mouvements, le soleil, la lune, les planètes, les comètes, les étoiles, les nébuleuses, coordonnées célestes, hypothèses cosmogoniques. Deux heures par semaine.

18a. **Elementary Astronomy.** The earth and its motions, the sun, the moon, the planets, comets, stars and nebulae, celestial co-ordinates, cosmogonic hypotheses. Two hours a week.

Third and Fourth Year, Arts: Latin Philosophy (French-Speaking students): Courses 1, 2; 3, 4; 5, 6; 7, 8; 9, 10; 11, 12; 13, 14; 15, 16; 18.

Third and Fourth Year, Arts: Latin Philosophy (English Speaking students): Courses 1, 2; 3a, 4a; 7a, 8a; 9a, 10a; 11, 12, 13, 14; 15, 16; 18a.

Students in St. Boniface College proceeding to the Course in Latin Philosophy will take the following course in the First and Second Years:

## COURS DE PHILOSOPHIE LATINE

(*Pour les élèves de langue française*)

### PREMIERE ET DEUXIEME ANNEE

*en 1922-23 et tous les deux ans ensuite.*

Tous les sujets sont fixes; il n'y a pas de sujets facultatifs.

#### *Français*

**Préceptes Littéraires.** Verest, Manuel de Littérature. Premier terme—Notions de psychologie littéraire, pages 19-53; Critique littéraire, pages 228-303; Les genres littéraires, pages 303-340. Second terme—Notions d'Esthétique et la Poésie, pages 340-440; genres intermédiaires, pages 497-514.

**Histoire de la Littérature et Auteurs français.** Premier terme—J. Calvet, Histoire illustrée de la Littérature française, pages 1-192; Procès, Morceaux choisis; Molière, Les Femmes savantes. Second terme—J. Calvet, Histoire illustrée de la Littérature française, pages 192-375.

**Auteurs.** Procès, Morceaux choisis, Extraits des principaux écrivains du XVIIe, XVIIIe et XIXe siècle; Corneille, Polyeucte; Racine, Athalie.

#### *Latin*

**Grammaire et Thèmes latins.** Revue générale de la grammaire et de la prosodie latine. Ragon, Exercices latins sur la syntaxe, Versions latines.

**Auteurs.** Premier terme—Cicéron, Pro Ligario; Virgile, Enéide, chant IIe. Second terme—Virgile, Enéide, Chant IIe, seconde moitié; Cicéron, Pro Marcello; Horace, Odes choisies.

#### *Grec*

**Grammaire et Thèmes grecs.** Revue de la morphologie et de la syntaxe. Ragon, Thèmes grecs, Versions grecques.

**Auteurs.** Premier terme—Démosthène, 1ère Olynthienne; Homère, Iliade, Chant I, 1ère partie. Second terme—Homère, Iliade Chant I, 2e partie; Platon, Criton.

#### *Anglais*

**Grammaire.** Dulac et Bonnet, Grammaire anglaise—Etude des particules, prépositions, conjonctions, interjections. Premier terme—p. 285-356. Second terme—p. 356 à la fin.

**Auteurs.** Premier terme—Macaulay, Warren Hastings. Second terme—Newman, Saul, Early Days of David, The Tartar and the Turk, The Turk and the Saracen, The Past and the Present of the Ottoman.

#### *Mathématiques*

**Algèbre.** Hall and Knight, Elementary Algebra, chapitres 32 à 39.

**Trigonométrie.** Playne and Fawdry.

#### *Histoire*

Uny, Histoire contemporaine.

*en 1923-24 et tous les deux ans ensuite.*

### *Français*

**Préceptes Littéraires et Exercices.** Verest, Manuel de Littérature. Premier terme—L'Art dramatique, Eloquence, première partie; le Débit. Second terme—Eloquence, deuxième partie.

**Histoire de la Littérature et Auteurs.** Premier terme—J. Calvet, Histoire illustrée de la littérature française, pages 375-547; Modèles Français, Tomes III et IV, extraits de Lesage, Bernardin de Saint-Pierre et André Chénier; Racine, Britannicus. Second terme—J. Calvet, Histoire illustrée de la Littérature française, pages 547-725; Procès, Modèles Français, Tomes III et IV: extraits des modernes: V. Hugo, de Musset, de Vigny, Leconte de Lisle, Veuillot, etc.; orateurs: Bossuet, Bourdaloue, Berryer, Montalembert, de Mun.

### *Latin*

**Thèmes latins et Versions.** Mouchard, Thèmes latins. Ragon, Cent-vingt versions latines.

**Auteurs.** Premier terme—Cicéron, Pro Murena, Ière partie. Horace, Epîtres. Second terme: Cicéron, Pro Murena, IIe partie; Horace, Satires.

### *Grec*

**Thèmes grecs at Versions.** Ragon, Thèmes grecs. Ragon, Deux-cents versions grecques.

**Auteurs.** Premier terme—Démosthène, Ière Philippique. Euripide, Médée, Ière partie. Second terme—Démosthène, IIe Philippique. Euripide, Médée, IIe partie.

### *Anglais*

Grammaire et Exercices de Thème et Version: Havet, L'Anglais enseigné aux Français. Premier terme—III, Ière partie. Second terme—III, IIe partie.

**Auteurs.** Premier terme—Macaulay, History of England (morceaux choisis). Second terme—Newman, What is a University? University Life, Athens, The Schoolmen, The Strength and Weakness of Universities, The Second Spring.

### *Histoire*

Desrosiers et Bertrand, Histoire du Canada.

### *Mathématiques*

Géométrie Analytique. La ligne droite, le cercle, la parabole, l'ellipse, l'hyperbole. Crawley and Evans' Analytical Geometry (University of Pennsylvania, Philadelphia), jusqu'à la page 106.



## LATIN PHILOSOPHY COURSE

(For English-speaking Students)

All the subjects are required.

### FIRST AND SECOND YEARS

For the year 1922-23 and every alternate year.

#### English

**Composition and Rhetoric.** Composition—the writing of at least four original compositions during each term with an aggregate of at least 2,000 words for each term. Coppens, Introduction to English Rhetoric,—Literary aesthetics, theory of the beautiful, taste, imagination, theory of literature, poetics, nature and kinds of poetry, lyric and epic poetry, fiction, realism and romanticism in fiction, development of the English novel. First term—pages 1-150. Second term—pages 151-314. Text: Macaulay, Essay on Lord Clive.

**English Literature.** Texts: History of English Literature, by W. J. Long (Ginn); Principles and Progress of Poetry, by Gayley and Young (Macmillan).

(1) First term: (a) History—Chapters VII-IX. (b) Prose—Bunyan's Pilgrim's Progress, Part I; Addison and Steele's The De Coverley Papers. (King's Treasuries, Dent.) (c) Poetry—Milton's L'Allegro, Il Penseroso, Lycidas; Dryden's Alexander's Feast; Pope's Rape of the Lock; Gray's Elegy in a Country Churchyard; Goldsmith's Deserted Village; Burns' Tam o' Shanter; The Cotter's Saturday Night.

(2) Second term: (a) History—Chapters X-XI. (b) Prose—Lamb's Essays of Elia; Ruskin's Sesame and Lilies (King's Treasuries, Dent.) (c) Poetry—Wordsworth's Tintern Abbey, Ode to Duty, London, 1802, Composed upon Westminster Bridge, "It is a beauteous evening," "The World is too Much With Us," "Scorn not the Sonnet;" Coleridge's Ancient Mariner; Byron's Prisoner of Chillon, Sonnet—On Chillon, Stanzas from Childe Harold; Shelley's Ode to the West Wind, To a Skylark; Keats's Ode to a Nightingale, On First Looking into Chapman's Homer, On the Grasshopper and the Cricket; La Belle Dame Sans Merci; Tennyson's Oenone, The Lady of Shalott, Ulysses; Browning's Home Thoughts from Abroad, Home Thoughts from the Sea, Evelyn Hope, My Last Duchess, Andrea del Sarto; Arnold's Rugby Chapel, Dover Beach.

#### Latin

**Composition and Sight Translation.** Bradley-Arnold Latin Composition. First term, Exercises 1-15; second term, Exercises 16-32. Sight translation based on the authors read.

**Authors.** First term—Cicero, Pro Ligario; Virgil, Aeneid II (first part). Second term—Virgil, Aeneid II (second part); Cicero, Pro Marcello; Horace, Odes (selected).

#### Greek

**Composition and Sight Translation.** Pitman's Greek Prose Composition. First term—Exercises 13-29. Second term—Exercises 30-44. Sight translation based on the authors read.

**Authors.** First term—Demosthenes, first Olynthiac; Homer, Iliad I (first part). Second term—Homer, Iliad I (second part); Plato, Crito.

#### *French*

**Grammar, Composition and Sight Translation.** First term—Fraser and Squair, High School French Grammar (to page 277); Composition; Sight Translation. Second term—Fraser and Squair, High School French Grammar (page 278 to end); Lazare, Elementary French Composition; Sight Translation; Dictation.

**Authors.** First term—Bazin, Contes Choisis. Second term—Molière, L'Avare.

#### *Mathematics*

**Algebra.** Hall and Knight, Elementary Algebra, Chapters 32 to 39.

**Trigonometry.** Playne and Fawdry.

#### *History*

Francis S. Betten, S.J. Modern World, Vol. I.

*For the year 1923-24 and every alternate year.*

#### *English*

**Composition and Rhetoric.** Composition—the writing of at least two original compositions during each term with an aggregate of at least 1,500 words for each term. Coppens, Introduction to English Rhetoric, Part II, Art of Oratorical Composition—Oratory, nature and types of oratory, division of the oration, style in public speaking, methods of oratorical composition, principles of argumentation. First term—pages 1-140; second term—pages 141-307. Text: Newman, Second Spring.

**English Literature.** (1) First term—(a) Tennyson's Gareth and Lynette, Lancelot and Elaine, The Passing of Arthur; Keats' St. Agnes Eve; Lowell's The Vision of Sir Launfal; Scott's Marmion (Gayley and Young); Arnold's Sohrab and Rustum. (b) Scott's Quentin Durward; Hardy's Far from the Madding Crowd.

(2) Second term—(a) Chaucer's Prologue to the Canterbury Tales (Gayley and Young). (b) Shakespeare's Romeo and Juliet; Coriolanus.

**Note**—These courses include a knowledge of the life and times of the authors read, from Long's History of English Literature and other sources.

#### *Latin*

**Composition and Sight Translation.** Bradley-Arnold Latin Prose Composition. First term—Exercises 41-55, omitting 43, 44, 47, 48 and 51. Second term—A continuation of this Course. Exercises 56-65, omitting 62.

**Authors and Sight Translation.** First term—Cicero, Pro Murena (1st part); Horace, Epistles. Second term—Cicero, Pro Murena (2nd part); Horace, Satires. Sight translation based on the authors read.

*Greek*

**Composition.** Pitman's Continuous Proses.

**Authors and Sight Translation.** First term—Demosthenes, Philippic I; Euripides, Medea (1st part). Second term—Demosthenes, Philippic II; Euripides, Medea (2nd part). Sight translation based on the prose author read.

*French*

**Grammar and Composition.** Text: Fraser and Squair, French Grammar and Reader. First term—Page 220-262. Exercises. Second term—Pages 262 to the end. Exercises. One hour a week.

**Authors.** First term—Selections from Bossuet. Second term—Racine's Athalie.

*Mathematics*

**Analytical Geometry.** The analytical geometry of the straight line, circle, parabola, ellipse and hyperbola. Crawley and Evans' Analytical Geometry to page 106.

*History*

Francis S. Betten, S.J., Modern World, Vol. II.

## CURRICULUM IN PHARMACY

### DIPLOMA IN PHARMACY

The University of Manitoba entered into an arrangement with the Pharmaceutical Association of Manitoba in 1914 whereby the work of instruction in Pharmacy of students desiring to qualify as licensed Pharmaceutical Chemists in Manitoba (formerly carried on by the Association in its own college, known as the Manitoba College of Pharmacy) was undertaken by the University. The Association continues to prescribe the preliminary educational qualifications, the conditions of apprenticeship and practical training, admission fees, etc., and issues the license, the University being responsible only for the work of instruction and examination. Similarly, the Association determines the value of all professional certificates or other like credentials from other associations or institutions, and reports to the University the credit to be given in the course for the Diploma in Pharmacy. An applicant for registration as a Certified Apprentice shall produce evidence that he has passed the Matriculation Examination for Arts or Science of the University of Manitoba or an examination reasonably equivalent thereto, and such standing shall be clear of all conditions. Intending students shall have the period of apprenticeship certified on special forms obtainable on request from the Registrar of the Pharmaceutical Association, and these certificates shall be presented to the Registrar of the Pharmaceutical Association not later than August 15th of the year in which the student intends to enter the University Course in Pharmacy. A certificate from the Registrar of the Pharmaceutical Association to the effect that the Association's requirements with respect to preliminary education, apprenticeship, etc., have been met must be presented to the Registrar of the University at the time of registration or in advance.

The course covers two academic years, as follows:

#### First Year

Course Nos.	Page	SUBJECT	Fall Term		Spring Term	
			Lecture Hours per week	Lab. Hours per week	Lecture Hours per week	Lab. Hours per week
1, 2; 23, 24	63	Chemistry.....	4	3	4	3
1, 2; 7, 8	84	Pharmacy.....	3	3	3	3
13, 14, 15, 16	84	Materia Medica.....	1	3	1	3
25, 26	85	Prescriptions.....	2	..	2	..
9	60	Mineralogy.....			2	
5, 7	68	Zoology.....	2	2		
1, 2; 3, 4	58	Botany.....	2	2	2	2

#### Second Year

5, 6; 27, 28	63	Chemistry.....	3	6	3	6
3, 4; 9, 10	84	Pharmacy.....	2	6	2	6
1, 2; 3, 4	56	Physics.....	3	2	3	2
17, 18, 19, 20	84	Materia Medica.....	3	2	2	2
2, 4	66	Physiology.....				

The following excerpts from the "Manitoba Pharmaceutical Act" touching the matters of preliminary educational qualification, conditions of apprenticeship, etc., are appended:

## THE PHARMACEUTICAL ACT

(4 Geo. V., Cap. 78, 1914)

\* \* \* \* \*

15. Before any candidate shall be entitled to be registered as a certified apprentice he shall,—

- (a) produce to the council satisfactory evidence of a good moral character;
- (b) pass such examination or examinations as the council shall have prescribed or shall prescribe, or produce to the council satisfactory evidence of requisite knowledge;

16. Before any candidate shall be entitled to be registered as a certified clerk he shall,—

(a) produce to the council satisfactory evidence that he has actually served as a certified apprentice for at least two years to a licensed pharmaceutical chemist who has during such period been engaged in actual practice as a compounder of physicians' prescriptions;

(b) pass such examination (to be called the "minor examination") as the council shall have prescribed or shall prescribe, or produce to the council other satisfactory evidence of requisite knowledge and experience.

(2) No person shall be competent to be registered as a certified clerk unless he shall have attained the age of at least eighteen years.

17. Before any candidate shall be entitled to be registered as a licentiate pharmaceutical chemist he shall,—

(a) produce to the council satisfactory evidence that he has served at least two years as a certified clerk or at least four years as a certified apprentice to a licensed pharmaceutical chemist who has been during such periods respectively in actual practice as a compounder of physicians' prescriptions, and has attended such course of instruction as the council shall prescribe; time spent in attendance on a regular course of lectures and instruction in any college or school of pharmacy recognized and approved by the council shall be considered part of such periods of service respectively;

(b) produce to the council satisfactory evidence that he has passed the minor examination;

(c) pass such examination (to be called the "major examination") as the council shall have prescribed, or shall prescribe, or produce to the council other satisfactory evidence of requisite knowledge and experience.

(2) No person shall be registered as a pharmaceutical chemist who has not attained the age of twenty-one years.

19. The council may in its discretion accept the diploma or other authenticated certificate of examination of any other competent examining board out of the Province of Manitoba, or of the University of Manitoba, as sufficient evidence of qualification of any applicants to be registered under this Act as certified apprentice, certified clerk or pharmaceutical chemist respectively.

## DEGREE IN PHARMACY

### Bachelor of Science in Pharmacy

The University of Manitoba confers the degree of Bachelor of Science in Pharmacy. The following are the requisites for proceeding in course to this degree.

#### Matriculation

The requirements for Matriculation are the same as for Matriculation for Arts or Science (see the Matriculation Calendar).

#### First Year

Course Nos.	Page	SUBJECT	Fall Term		Spring Term	
			Lecture Hours per week	Lab. Hours per week	Lecture Hours per week	Lab. Hours per week
1, 2; 3, 4	35	English.....	4	----	4	----
1; 4; 5, 6	51	Mathematics.....	6	----	6	----
1, 2; 3, 4	56	Physics.....	3	2	3	2
1, 2; 21, 22	63	Chemistry.....	3(+1)	3	3(+1)	3
9	60	Mineralogy.....	----	----	2	----
5, 6	40	One of— French.....	3	----	3	----
1, 2 or 3, 4; 5, 6	42	German.....	3	----	3	----

#### Second Year\*

9, 10; 17, 18	56	Physics.....	3	3	3	3
3, 4; 25, 26	63-64	Chemistry.....	3	6	3	6
1, 2; 3, 4	68	Zoology.....	2	2	2	2
1, 2; 7, 8	59	Botany.....	2	2	2	2
1, 2; 7, 8	84	Pharmacy.....	3	4	3	4
13, 14, 15, 16	84	Materia Medica.....	2	2	2	2
25, 26	84	Prescriptions.....	2	----	2	----

#### Third Year\*

7, 8; 11, 12; 33, 34	63-64	Chemistry.....	4	9	4	9
9, 10; 11, 12; 14	59	Botany.....	3	5	4	5
3, 4; 9, 10	84	Pharmacy.....	2	3	2	3
17, 18, 19, 20	84	Materia Medica.....	2	3	2	2

#### Fourth Year

5, 6; 11, 12	84	Pharmacy.....	2	9	2	9
21, 22; 23, 24	84	Materia Medica.....	2	6	2	6
13, 34; 37, 38,	64	Chemistry.....	2	6	2	6

\*The same periods of apprenticeship, certified to by the Registrar of the Manitoba Pharmaceutical Association, are required for admission to the Second and Third Years of this course, as are required for admission to the First and Second Years respectively of the Diploma Course. This requirement is imposed in conformity with the Pharmaceutical Association Act. (See page 82).

## Courses in Pharmacy in Detail

### DEPARTMENT OF PHARMACY

Henry Ernest Bletcher, B.Sc., F.C.I.C. .... *Professor*  
 Dougald McDougall, Dipl. Phar. (Man.) ..... *Demonstrator*

**1, 2. Pharmacy I.** First Term: An exposition of the principles on which pharmaceutical operations are based; the utilization of these processes for specific ends; the arithmetical calculations required in operative pharmacy; the historical development of pharmacy. Second Term: An extended consideration of the galenical preparations of the British Pharmacopoeia; the comparison of other important national pharmacopoeias with the British Pharmacopoeia. Three hours a week.

**3, 4. Pharmacy II.** The application of Chemistry to the preparation of medicines both inorganic and organic with especial reference to the British Pharmacopoeia; methods of manufacture; characters of pure products; possible impurities; tests. Study of unofficial chemicals of interest. Two hours a week.

**5, 6. Pharmacy III.** The preparation, characters, and uses of important medicinal substances especially certain alkaloids, glucosides, synthetics and biologics. Special topics relating to pharmaceutical research will be assigned for investigation and report. Two hours a week, with assigned reading and reports.

**7, 8. Practical Pharmacy I.** This course includes practice in the physical operations used in pharmacy such as determination of weight, volume, temperature, specific gravity, melting point, boiling point, etc.; the study of simple heat phenomena; simple heat processes; filtration; evaporation, crystallization, etc.; distillation; dispensing of classes of preparation commonly prescribed by physicians; dispensing of difficult prescriptions; care of apparatus; methods of work. Three hours a week.

**9, 10. Practical Pharmacy II.** The preparation and purification of typical inorganic and organic chemical substances used as medicines; the manufacture of galenical preparations; the assay of selected preparations. Six hours a week.

**11, 12. Practical Pharmacy III.** The identification of medicinal chemicals, detection of impurities, special methods for the determination of poisonous impurities. Determination of the identification values of fixed and volatile oils. A careful study of extraction and purification methods suitable for alkaloids, glucosides, and resins. The separation and identification of alkaloids in mixtures. Preparation of certain synthetics. Nine hours a week.

**13, 14. Materia Medica I.** The detailed study of organic drugs, particularly those of the British Pharmacopoeia; the principal facts relating to their sources, preparation, identification, purity, characteristics, constituents and toxicology. One hour a week.

**15, 16. Materia Medica II.** A practical course to accompany course I; a considerable number of plant drugs will be carefully studied by means of specimens selected to show the characteristics by which the drug is identified. Two hours a week.



17, 18. **Materia Medica III.** The study of the chemical nature of important classes of plant constituents including among others the organic acids, fixed oils, volatile oils, alkaloids, glucosides, tannins, carbohydrates; products of destructive distillation; fermentation products; the recognition of the natural orders of most importance as sources of drugs. Two hours a week. Selected reading. Reports.

19, 20. **Materia Medica IV.** The recognition by means of the microscope of selected powdered drugs; the detection and recognition of impurities. Two hours a week.

21, 22. **Materia Medica V.** Plant biochemistry, with special attention to the medicinal substances contained in plants. Two hours a week. Assigned reading. Reports.

23, 24. **Materia Medica VI.** A laboratory course to accompany course V. Six hours a week.

25, 26. **Prescriptions.** This course includes the study of the Latin of pharmacy, posology, prescription arithmetic, methods of compounding prescriptions, recognition and treatment of incompatibilities, the Pharmaceutical Act and other legislation affecting the practice of pharmacy, and all other topics of the Diploma course in Pharmacy not specifically classified elsewhere. Two hours a week.

## GENERAL REGULATIONS

### REGISTRATION

*Students desiring to register in the Faculty of Arts and Science for classes, except those of the Fourth Year, are required to make application for permission to do so, using a blank form procurable at the Registrar's office. This form properly filled out should be returned to the Registrar at as early a date as possible and not later than August 1st.*

*The 1922-1923 session begins on Tuesday, September 19th, and lectures in Arts, Science and Pharmacy open on Thursday, September 21st,*

*Students who present themselves for registration at the Registrar's Office of the University later than 5 o'clock p.m., on Wednesday, September 20th, will be required to pay the sum of \$2.00 in addition to their tuition fee, or, in case all their classes are taken in an affiliated college will be subjected to a fine of \$2.00.*

*No registration will be accepted after Monday, October 2nd, unless the Board of Studies on investigation finds that a special concession is warranted.*

*The dates for the registration of extra-mural students are the same as those for students in attendance, and the same regulations apply, except that extra-mural students are not required to register in person, but may do so by mail.*

### EXAMINATIONS

#### General Regulations

1. The regular examinations for undergraduates in Arts, Science, and Pharmacy are given in part in December and in part in April of each academic year. For definite information as to the work upon which each of these sets of examinations is based, the student is referred to the curricula of the various years as set forth elsewhere in this Calendar.

2. Examinations in Arts and Science may be held at such outside centres in Manitoba, Saskatchewan, Alberta and British Columbia, as the Board of Studies may from time to time approve of; it being understood that this does not apply to practical or oral examinations, where such are required.

#### Matriculation Examinations

1. The Examinations for Matriculation into all Faculties are held twice in each year, in the months of June and September.

2. The examinations in June are conducted by the Department of Education for Manitoba for the University, concurrently with its own examinations for Teachers' Certificates, and insofar as the requirements for the two courses correspond, the two groups of candidates write upon the same papers. The University determines its requirements for entrance and its standards of examination, the joint examiners are appointed by mutual agreement, and the Matriculation examination results are submitted to the Board of Studies, which determines whether each candidate passes or fails and, in case he passes, determines his grading.

These examinations are held in Winnipeg and at a large number of outside points in the province.

In addition, the June Matriculation Examinations are held by the

University on request at such points outside of Manitoba as may from time to time be approved by the Board of Studies.

3. The September Matriculation Examination is held at the University in Winnipeg only.

#### **Credit for Term Work**

1. At the close of each term the instructors in Arts and Science in the University and the affiliated colleges may make a report on the work of each student for the term just closing in the form of an award of marks, to be based upon the results of recitations, reports, essays, papers or interim examinations, or a combination of any number or of all of these tests, as indicating the character of the work throughout the term. The maximum credit allowed for term work in such a report shall be 20 per cent. of the total marks allowed for the subject or portion of the subject in question.

2. On the acceptance of the report of the instructor, the marks given for term work are added to the marks obtained at the written examination in the subject (for which the maximum shall be 80 per cent. of the total marks allowed for the subject or portion of the subject in question), and this total shall determine the standing of the student.

3. In case the instructor submits no report, or his report is not accepted by the Board of Studies for any reason, the standing of the student is determined entirely by the final written examination, which will be valued on the basis of the total marks allowed for the subject or portion of the subject in question.

4. In any case, the award of scholarships and medals is made entirely on the results of the final written examinations.

5. The marks for term work will be reported to the student by the Registrar when the marks given for his written examination are announced, but not before.

#### **Failures and Supplementals**

1. For information regarding Matriculation failures and supplementals see Matriculation Calendar.

2. An undergraduate student in Arts, Science or Pharmacy who has failed on any paper or papers at the December examinations may proceed with the work of the second term and may remove the condition or conditions at a supplemental examination given in April before the regular April examinations, and the mark or marks obtained at this supplemental examination will, if higher, replace the original mark or marks in computing the aggregate of the student for the year.

3. A student of the First or Second Years in Arts or Science, who, at the close of the April examinations, has not more than six conditions against him, is granted standing for the year, with supplementals. If by reason of having failed on more than six papers the student is not granted standing for the year he will not be required, however, to repeat at a subsequent examination any paper or papers on which he has obtained 60 per cent. or above.

4. In the case of examinations of the First and Second Years in Arts, where the candidates are given hour-and-a-half papers in some subjects and three hour papers in other subjects, the hour-and-a-half paper is the unit in determining failures. A failure in a three hour paper is reckoned as two failures, unless the examiners recommend otherwise. Students are required to pass in both the term essay work and final examination in the subject of English Prose and Composition.

5. A student taking one of the special group courses of the Third or Fourth Years in Arts, has his standing for the year determined by the combined results of the December and April examinations (supplemental and regular). He must obtain 50 per cent. of the aggregate of the marks allowed for each *major* or *minor* subject, in order to obtain standing in that subject; and as well 50 per cent. of the aggregate of the marks allowed for all subjects of his course in order to obtain standing on the course. Having failed to obtain 50 per cent. of the aggregate of the marks in any subject, he is required to repeat all the examinations in that subject as supplemental examinations. Having failed to obtain 50 per cent. of the aggregate of the marks in all subjects of the course, or having failed to obtain the pass mark in more than three papers, he is required to repeat all the examinations of the year at the regular examinations of a subsequent session, except in the subject or subjects where he has obtained a mark of 60 per cent. or higher. A student who has obtained at least 50 per cent. of the aggregate of the marks in all subjects of his course, and, as well, at least 50 per cent. of the aggregate of the marks in each subject of his course, and has failures registered against him in not more than three papers of the two examinations, is granted standing but is required to take supplemental examinations in the paper or papers in which he has still failed to secure the pass mark.

6. A student taking any other special course, or the General Course of the Third or Fourth Year in Arts or the Third or Fourth Year in Science, has his standing for the year determined by the combined results of the December and April Examinations (supplemental and regular). In order to secure a pass he must obtain at least 50 per cent. of the aggregate of the marks allowed for all examinations of his course, and may not, at the close of the April examinations, have more than three conditions registered against him (a failure on an hour-and-a-half paper operating to create only a half condition).

7. The pass in all undergraduate subjects in Arts is 50 per cent. both for extra-mural and intra-mural students.

8. A student of the Diploma Course in Pharmacy, who, at the close of the April examinations, has not more than three conditions against him, is granted standing for the year, with supplementals, provided his aggregate is at least 60 per cent. of the total maximum marks assigned to all subjects of his course.

9. The pass mark in all professional subjects in Pharmacy is 60 per cent.; in the remaining subjects of the course 50 per cent.

10. The April Supplemental Examinations begin on the third Monday of the month and the September Supplemental Examinations begin on the first Tuesday of the month, and run concurrently with the September Matriculation Examinations. For them, as for all other supplemental and special examinations, application should be made at least thirty days in advance and on blank forms intended for the purpose, to be obtained from the Registrar.

11. The ordinary scale\* of fees for Supplemental Examinations is as follows: One full paper (three hours), \$6.00; two full papers, \$7.00; three or more full papers, \$8.00; one half-paper (one and a half hours) \$3.00; 50 cents for each additional half-paper.

12. In all cases, students who are required to take a supplemental

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\*In the case of examinations of the First and Second Years in Arts and Science, the hour-and-a-half paper is employed as the unit throughout, a three-hour paper counting as two units. \$3.00 is charged for the first hour-and-a-half unit, and 50 cents for each additional hour-and-a-half unit, whether of half or full papers up to a maximum of \$8.00.

examination and who fail to present themselves for the same and pass at the September examination following the regular examination at which the original failure was made, must, when they present themselves for examination at a later date, accommodate themselves to any changes in the curriculum that may have been made in the meantime.

13. A condition in any subject may also be removed by writing upon the paper provided in the subject in question at any regular examination where such paper is examined. In such a case the supplemental examination fee is required from the candidate whether or not he has paid at the same time the regular examination fee. He should also make application therefor on the special form provided for such cases by the Registrar.

14. September Supplemental Examinations are held at the University, and also at such outside centres in Manitoba, Saskatchewan, Alberta and British Columbia as the Board of Studies may from time to time approve.

### **Conditions of Special and Supplemental Examination**

Candidates for any supplemental or special examination should at least thirty days before the date of the examination, make suitable application to the Registrar, from whom blank forms of application may be obtained. The required fee must accompany the application. The fee for a regular examination is payable (along with the tuition fee, if such is required) at the time of registration for class work.

### **EXTRA-MURAL STUDENTS IN ARTS**

Extra-mural students in Arts, resident in the Province of Manitoba and possessing the requisite previous academic standing, will be accepted, subject to the following conditions:

1. No subject may be elected that involves oral or laboratory work.
2. Extra-mural students must register within the same time-limits as are provided for students in attendance and must conform to the same regulations and standards as are in force for intra-mural students, save that term marks will not be exacted, except in the case of term essays in English.
3. Extra-mural students must present themselves for examination at the time appointed for intra-mural students and either at Winnipeg or at one of the outside centres specially authorized by the Board of Studies for the purpose.
4. No student will be allowed to complete in full the requirements for the Bachelor of Arts degree extra-murally but a minimum of one year's attendance at this or another approved University will be exacted before the degree is conferred.
5. Every extra-mural candidate at any examination may be required to forward to the Registrar a certificate from some trustworthy person that he is of good moral character.

N.B.—A student who has obtained at least a year's credit as an extra-mural student while resident in the Province of Manitoba or who has attended for at least a year as an intra-mural student at the University of Manitoba or an affiliated college, may, if, on removal from the province, he desires to continue his course extra-murally, have the privilege extended to him of so doing, provided that all the other requirements set forth above are complied with and that he has a minimum of one year's attendance at an approved University to his credit, before the degree of Bachelor of Arts is conferred.

It is understood that the additional limitations imposed over and above those in effect in 1921-1922 and previously, by the above regulations do not apply in the cases of any extra-mural students who were registered for that session or earlier.

### Appeals

1. Any candidate is at liberty to enter an appeal, within three weeks after the publication of the examination results in the public press, against the standing assigned him by the examiners and to request a revision of the marking of one or more of his papers.

2. The fee for such revision is \$2.00 for each paper. This fee is payable at the time the appeal is made, and in case the revision takes place, is not returnable, whether the original marking is sustained or not. When the revision is not granted the fee is returnable.

3. There is no special form of application for such revision.

### Conditioned Students

1. Candidates for matriculation into the Faculties of Arts, Science, Engineering and Architecture who have failed in not more than one paper, or, having failed in more than one, have at a subsequent supplemental examination, passed in all but one of them, may, as conditioned students proceed with their course with the view of subsequently obtaining full undergraduate standing. This regulation is subject to the limitations laid down in 3 below.

2. Candidates with undergraduate standing in Arts and Science, who have failed on not more than one paper at the First, the Second or the Third Year examinations, or who, having failed on more than one, have at a subsequent supplemental examination, reduced the number of their conditions to one, may as conditioned students proceed with their course with the view of subsequently obtaining full standing in their year. This regulation is subject to the limitations laid down in 3 below.

3. The following limitations are placed on the application of regulations 1 and 2 above:

(a) Matriculation conditions must be removed before the commencement of the Second Year, First Year conditions before the commencement of the Third Year, and Second Year conditions before the commencement of the Fourth Year.

(b) A student who, by virtue of regulations 1 and 2 above, proceeds to any examination with conditions from a previous examination still registered against him, and who at the close of the said examination has more than three conditions against him, while otherwise qualifying for a pass, will not immediately receive standing, but will have the same withheld, until, at a subsequent supplemental examination, he reduces the number of his conditions to such an extent and in such a way as to entitle him to proceed under 3 (a).

### Equivalent Examinations

1. Provincial Department of Education examinations are accepted *pro tanto* by the University, in so far as the subjects and standing are, to the satisfaction of the Board of Studies, the same as, or equivalent to, those required by the University—but candidates offering certificates of having passed such examinations are required to pass in such subject or subjects not covered by their certificates, as may, in the opinion of the Board, be necessary for the completion of the examination for partial standing towards which such certificates are presented.

2. (a) The following are accepted *pro tanto* for subjects of Part I of Arts or Science Matriculation:

(1) Grade X Teachers' Examination Certificate, Manitoba.

(2) Third Class Diploma, Saskatchewan, Alberta or British Columbia.

(3) Entrance to Model Schools Certificate, Ontario.

(b) The following are accepted *pro tanto* for subjects of Parts I and II of Arts or Science Matriculation:

- (1) Grade XI Teachers' Examination Certificate, Manitoba.
- (2) Second Class Diploma, Saskatchewan, Alberta or British Columbia.
- (3) Entrance to Normal Schools Certificate, Ontario.

(c) The following are accepted *pro tanto* for subjects of First Year in Arts or Science:

- (1) Grade XII Teachers' Examination Certificate, Manitoba.
- (2) First Class Diploma, Saskatchewan, Alberta or British Columbia.
- (3) Entrance to Faculties of Education Certificate, Ontario.

3. Provincial or Departmental Certificates for any other provinces of the Dominion are granted such *pro tanto* standing as the Board of Studies may from time to time recommend.

4. Candidates presenting *pro tanto* certificates must attempt to pass at one time in all the subjects necessary to the completion of the entire examination.

5. Holders of certificates of educational value, other than those above mentioned, receive such recognition as the Board of Studies may from time to time recommend.

6. Students of recognized colleges, who are matriculated in this University may pursue their course of study in said college and may come up to the University examinations as students of said college.

#### **Admission Ad Eundem Statum and Ad Eundem Gradum**

Members of any other University in His Majesty's Dominions, or of any other University accredited by the University of Manitoba, who may apply for admission to this University, are not required to take the entrance Examination of the Faculty to which they belong, but may be admitted *ad eundem statum* or *ad eundem gradum*, on presentation of their credentials and payment of the required fee.

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#### **ATTENDANCE ON LECTURES AND PRACTICAL WORK**

All students, except those who have been duly registered as taking their work extra-murally, are expected to be regular in their attendance at lectures. When the number of absences recorded against a student under the Faculty of Arts and Science in any course exceeds ten per cent. of the number of lectures given for the term in that course, the instructor shall report the case to the Dean, who shall lay it before the Committee on Attendance and Progress of Students. When a student's attendance continues unsatisfactory, the Committee with the concurrence of the instructor and of the Discipline Committee of the General Faculty Council has power to exclude such student from classes or examinations, or both. The number of absences is reckoned from the opening date of the term and not merely from the date of registration of the student.

When, after repeated warnings a student is found to be persistently negligent with respect to his work or fails for any other reason to make satisfactory progress, the instructor shall report his case to the Dean, who shall lay it before the Committee on Attendance and Progress of Students. When the student's work still continues unsatisfactory, the Committee, with the concurrence of the instructor and the Discipline Committee of



the General Faculty Council, has power to exclude such student from classes or examinations or both.\*

All students in Arts registered in an affiliated College will be expected to comply with the regulations as to attendance and work made by their College and a statement from the Faculty of an affiliated college in which any such student is registered to the effect that his attendance or work have been unsatisfactory, will be sufficient to debar him from examination.

No student is allowed to present himself for examination in any laboratory or drafting-room subject, unless he has satisfactorily carried out and recorded the minimum of practical work in each such subject decided upon by his Faculty; the scheme of practical work to be announced at the beginning of each session. This regulation applies to all classes of students, whether of Arts, Science, Engineering, Medicine or Pharmacy, doing practical work under the direction of the University Faculties.

## SCHOLARSHIPS

### Arts, Science and Pharmacy

#### *First Year in Arts and Science*

Eleven Scholarships of \$100.00 each on the aggregate of the entire examination of the year, as follows: Six in Arts; two in First Pre-medical year; two in the Pre-engineering year; one in Science. Two Scholarships of \$50.00 each in Latin Philosophy as follows: One for English-speaking students and one for French-speaking students.

#### *Second Year in Arts and Science*

Seven Scholarships of \$100.00 each on the aggregate of the entire examination of the year, as follows: Five in Arts; one in Second Pre-medical year; one in Science. Two scholarships of \$50.00 each in Latin Philosophy as follows: One for English-speaking students and one for French-speaking students.

#### *Third Year in Arts and Science*

Seventeen scholarships of \$100.00 each, as follows: One in each of the following courses—General Course; Major Course in Greek, Latin, Hebrew, English, French, German, History, Political Economy; full course in Philosophy, Latin Philosophy and Mathematics: one in each of the four divisions of the Natural and Physical Science Course; one in Science.

#### *First Year in Pharmacy*

At the examination of the First Year of the course for the Diploma in Pharmacy, a scholarship of \$100.00 is awarded to the student ranking first on the aggregate of the marks on all subjects of the examinations.

## GENERAL CONDITIONS OF ELIGIBILITY TO RECEIVE SCHOLARSHIPS.

1. A student is not qualified to receive a scholarship unless—

(a) He has been ranked above all competitors on the aggregate of the marks in the subject or subjects for which the scholarship is given, or, in cases where more than one scholarship is offered, is one of a group that has been so ranked, or has become eligible through reversion (see below).

(b) He has obtained first-class standing on the aggregate of the marks in the subject or subjects for which the scholarship is given;

\*A student who is debarred from University examinations in any subject or subjects at the end of a term or session because of insufficient attendance or unsatisfactory work, is not allowed to take examination in the subject or subjects subsequently until he has fulfilled the ordinary attendance regulations with respect to such subject or subjects, as applied to new students during a succeeding term or session and has done satisfactory work therein.

(c) And has passed at the same examination\*in all the subjects required for the full work of the academic year in which the scholarship is given;

(d) And has removed at the same examination, or prior to it, any condition from a previous year or grade that may have been registered against him.

2. No student may hold more than one scholarship. If a student succeeds in otherwise qualifying for more than one scholarship in any year, he will be allowed to receive but one, and his name will be entered upon the list as having qualified for the other, though not entitled to any of the funds; and such other scholarship will be granted to the one ranking next to him, provided he is otherwise eligible.

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### CONDITIONS GOVERNING THE PAYMENT OF ISBISTER SCHOLARSHIPS

The general conditions governing the payment of these scholarships are determined by the terms of the will under which the trust was established, from which the following is an excerpt:

"I desire it to be understood that I establish this trust for the benefit and improvement of education in the Province of Manitoba, and it is my wish that it shall take the form of a general scholarship or prize fund for the encouragement of meritorious students and scholars in the various places of education in the Province for both sexes, from the Common School to the Colleges and Institutions and Private Schools where the highest education is given without any distinction of race, creed, language or nationality. In the Lower Schools this encouragement may take the form of prizes, and in the Higher Schools that of scholarships of sufficient value to maintain or help to maintain the holder at a College or University, either in Canada, Great Britain or elsewhere, and I leave the Governing Body of the Manitoba University free to carry out the objects of the trusts now confided to them in the manner which to them may seem best."

The scholarships are paid during the course of the annual session following that at the examinations of which they were won, provided the winners are duly enrolled and regularly in attendance at the University or an affiliated college, upon the full work of the next succeeding year of the degree course they have begun, and payment is made upon the following plan: One moiety on the second Monday in November and one moiety on the second Monday in February, upon receipt by the Bursar of certification as to the award of the scholarship and as to compliance with the above requirements of registration and attendance from the Registrar and the President in the case of students registered for instruction in the University, and from the Registrar of the University and the head of the College in question in the case of students registered for instruction in an affiliated college.

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\*A failure or failures on December Examinations in undergraduate subjects of the First or Second Year in Arts, on which supplemental examinations are successfully passed in April, will not operate to debar the student concerned from receiving a scholarship, should he otherwise qualify, unless the subject in which the failure occurs be one of the group on which the scholarship is awarded.

A failure or failures on December Examinations in subjects of the First or Second Year in Engineering, on which supplemental examinations are subsequently passed in April, will not operate to debar the student concerned from receiving a scholarship should he otherwise qualify. In the Third and Fourth Years in Arts a failure on a December examination in any subject of the year, will operate to debar the student concerned from receiving a scholarship on that year's work, even if a supplemental examination in the subject in question is later successfully passed.

If, for any reason, the winner of a scholarship is not in attendance as an intra-mural student during the academic year next following that in which the scholarship is won, the scholarship will automatically be extended for another year.

If, for any reason, the winner of a scholarship is not in attendance during the two academic years next following that in which the scholarship is won, the scholarship will lapse.

The values stated for the scholarships are the maximum values which the scholarships will not exceed. If the funds do not allow of the scholarships being of such maximum value, then they shall be proportionately of such value as the funds will allow.

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### AIKINS SCHOLARSHIPS IN THE ENGLISH LANGUAGE AND LITERATURE

Sir James Aikins, Lieutenant-Governor of Manitoba, and formerly for many years a member of the Council of the University and its Honorary Bursar, has established a trust for the purpose of providing annually what are to be known as the Aikins Scholarships in the English Language and Literature. They are to be awarded to the students ranking first at the annual examinations in English of the First Year, the Second Year and the major course of the Third Year respectively, and are to have the same conditions attached as are attached to the Isbister Scholarships with respect to first class standing in the subject, concurrent completion of a full course of study of the year in question and freedom from prior conditions. They will be paid during the next succeeding annual session upon the same plan as that of the Isbister scholarships. The amounts have been fixed for the present at the following:

First Year.....	\$ 75.00
Second Year.....	75.00
Third Year, major course.....	125.00

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### 1851 EXHIBITION SCHOLARSHIPS

By a recent decision of the Royal Commission for the Exhibition of 1851 the University of Manitoba has been included in the list of overseas Universities that are invited to recommend candidates for the Scholarships that are awarded annually by the Commissioners. Every candidate put forward must be a British subject under twenty-six years of age and a *bona fide* student of science of not less than three years' standing. His qualifications for pursuing independent research must be such as to entitle his candidature to serious consideration. The scholarships are of the value of £250 per annum with certain additional allowances. They are tenable ordinarily for two years, the continuation for a second year depending upon the satisfactory nature of the scholar's first year's work. In cases of exceptional merit, where it appears that the renewal is likely to result in work of scientific importance, renewal for a third year may be accorded. These Scholarships may be held, with the approval of the Commissioners, at any institution in Great Britain or abroad, but a scholar will not be permitted to conduct his investigations in the country in which he has received his scientific education.

Applications from students of the University of Manitoba to have their records considered with a view to their possible nomination to the Commissioners for one of these Scholarships, should be in the hands of the Registrar by March 1st in any year.

## PRIZE OF THE MANITOBA BRANCH OF THE CANADIAN INSTITUTE OF MINING AND METALLURGY

The Manitoba Branch of the Canadian Institute of Mining and Metallurgy has voted a sum of money not to exceed \$100.00 to be presented as a prize to an undergraduate studying Science in the University of Manitoba for the best paper dealing with a mining subject or a geological subject related to mining. The following rules will apply in the awarding of this prize:

1. The prize will be known as "The Prize of the Manitoba Branch of the Canadian Institute of Mining and Metallurgy."

2. Undergraduates of the University of Manitoba who are studying science are eligible to compete.

3. The prize will be awarded for the best paper dealing with mining or mining geology. Preference will be given to papers based on the results of field work or laboratory research, conducted by the candidate.

4. The prize has a maximum value of \$100 which may be reduced at the discretion of the committee in charge to \$50. The committee need not make an award if none of the papers submitted is considered of sufficient merit.

5. Candidates must submit three copies of their paper to the secretary of the Manitoba Branch of the Institute on or before April 1st, 1922, and it is suggested that subjects should be submitted to the committee for approval before commencing work.

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## THE McMILLAN FELLOWSHIP IN HISTORY AND POLITICAL SCIENCE

A fellowship in History and Political Science of amount \$500.00 will be awarded annually to a graduate of the University of Manitoba who has obtained a creditable standing in History and Political Science (including Economics), and who will register for graduate work in this field in the University of Manitoba, or in another approved University. The award will be made by a committee consisting of the Chancellor, the President and four members named by the Board of Governors. Application should be made to the Registrar.

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## HUDSON'S BAY COMPANY RESEARCH FELLOWSHIP

This Fellowship is offered annually by the Hudson's Bay Company for research in pure or applied science. The following regulations will govern the appointment to this Fellowship:

1. The Fellowship shall be known as the Hudson's Bay Company Research Fellowship, and shall be tenable at the University of Manitoba.

2. An appointment will be made annually, if a suitable candidate is nominated, by the Council of the University of Manitoba, and confirmed by the Governor of the Hudson's Bay Company, for the ten years, 1920-29, inclusive.

3. In the event of no suitable candidate presenting himself, two Fellows may be appointed in the succeeding year.

4. The Fellowship is of the annual value of \$1500.00 and will be paid in four instalments on presentation of satisfactory reports on the work of the Fellow from the Head of the Department in which he is working. At least nine calendar months' work at the University of Manitoba must be completed before the payment of the last instalment.

5. The appointments are open to graduates (excluding *ad eundem* graduates) of any Canadian University.

6. Each Fellowship will be tenable for a period of one year, and will be renewed for a further period only in a very exceptional case.

7. Each Fellowship may be held in any branch of pure or applied science (*i.e.*, the Natural and Physical Sciences, the Medical Sciences, Engineering, and Agriculture).

8. A candidate should adduce special qualifications in the subject in which he desires to carry on research. Published papers or evidence of completed research will be regarded as one evidence of such qualifications.

9. The entire time of the Fellow must be devoted to original research carried out under the general control of the Head of the Department in which he elects to work.

10. All publications of results of research carried out under appointment to one of these fellowships shall bear on the title-page, after the name of the author, the words "Hudson's Bay Company's Research Fellow of the University of Manitoba."

11. The nomination will be made by the Fellowship Committee of the Scientific Club of Winnipeg, in conjunction with the Chancellor and President of the University of Manitoba.

12. The regulations will be circulated to all the Canadian Universities, and other bodies likely to be interested, in January of each year. The applications must be in the hands of the Registrar of the University of Manitoba by April 1st of each year, and the appointment will be made on or about May 1st of each year. The Fellow will be required to commence his work at the University of Manitoba not later than the opening of the following session.

#### CLIFFORD MOIR PRIZE

A money prize of \$100.00 given by Mr. J. J. Moir of Killarney, Man., in memory of his son the late Clifford James Moir, B.A., 1916, who gave his life in his country's service, June 30th, 1918, while a member of the Royal Air Force, is offered for competition each year among students graduating in Division D of the Course in Natural and Physical Science. The award of the money prize will be accompanied by the granting of a parchment certificate. The usual conditions of eligibility demanded for a gold medal will be exacted.

#### TRAVELLING SCHOLARSHIP

The sum of \$600.00 is given annually from the revenue of the Isbister Trust for the maintenance of a Travelling Scholarship, to be awarded under the following conditions:

1. The object of the Travelling Scholarship is to assist students who have completed their Final Year in the University to pursue the special line of studies which they have selected, at some other University or seat of learning.

2. No student may hold a Travelling Scholarship for a longer period than two years; and no student who has once held such a scholarship may be eligible a second time.

3. Those eligible to compete for the scholarship are students who have graduated not more than twelve months previously, at the regular spring examination, in one of the special courses in Arts, or in the course in Medicine or Engineering.

4. One Travelling Scholarship is offered for competition in every alternate year, or oftener if a scholarship be vacant; and the course in which it is offered is decided by rotation in the following order:—The special course in Classics, the special course in Mathematics, the special course in Modern Languages, the special course in English Philosophy, the special course in Latin Philosophy, the special courses in Science, the course in Medicine, the courses in Engineering.

The course in which it is proposed to award it shall be announced in the Calendar of the year previous.

5. The scholarship is awarded to the student obtaining the highest marks at a special examination in the subjects of the selected course, the date and place of holding which is announced in the Calendar of the year previous; provided always that the scholarship shall not be awarded to any student who shall not have (a) obtained first class standing at the special examination, and (b) obtained first class standing and have passed in all subjects of his final examination. If these conditions be not satisfied the scholarship may, if the Board of Studies deem it advisable, be offered under similar conditions in the subjects of the course next in rotation.

6. The place at which the successful student shall pursue his studies shall be selected by the student, subject to the approval of the Board of Studies.

7. The scholarship is of the yearly value of \$600.00, and the amount is paid each year in two moieties; provided that the second moiety in each year shall not be paid until the student shall have spent at least three months in studying at the institution selected, and shall have produced a certificate from the authorities of the institution of his having made satisfactory progress.

A special Travelling Scholarship Examination is held in June, at a date announced by the Registrar. Applications for this examination should be forwarded to the Registrar thirty days in advance.

The scholarship will be opened for competition in the year 1923 to students who have graduated in that year or the previous year in Engineering.

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### THE RHODES SCHOLARSHIPS

By the will of the late Mr. Cecil Rhodes, a scholarship of the value of £300 yearly, tenable at any college in the University of Oxford for three consecutive academical years, has been allotted to the Province of Manitoba. Nominations to the scholarship are made by a committee of former Rhodes scholars now resident in Manitoba, under the chairmanship of Mr. Justice Perdue. The secretary of the committee is Professor Chester Martin of the University Arts Faculty. One appointment is made by the trustees in each year. Nomination of the 1923 scholar will be made in November, 1922. For a form of application request should be made to the secretary of the committee.

The following information as to the requirements and procedure in connection with appointments to Rhodes scholarships, as hitherto prevailing, is appended:

In order to be eligible for nomination to this scholarship, candidates—

(a) Must be British subjects, with at least five years' domicile in Canada, and unmarried.



(b) Must have spent four years in Manitoba educational institutions, two at least of which must have been as registered undergraduates of the University of Manitoba.

(c) Must have passed their nineteenth, but not have passed their twenty-fifth birthday, on October 1st of the year for which they are elected.

The University of Manitoba has been admitted by the University of Oxford to the privileges of the Statute on Colonial and Indian Universities. This statute relieves its students of a certain standing from the requirements of Responsions (the first public examination exacted by the University of Oxford from each candidate for a degree), providing a sufficient knowledge of the Greek language has been shown. It also admits to Junior or Senior status, as follows:—

(a) Any member of a University so admitted, who shall have pursued a course of study prescribed by it and extending over two years, and who shall have passed all the examinations incident to the course, may be admitted to the status and privileges of a Junior Colonial or Indian Student.

(b) Any member of a University so admitted, who shall have pursued a course of study prescribed by it and extending over three full years, and who shall have taken honors in the final examination incident to the course, may be admitted to the status and privileges of a Senior Colonial or Indian Student.

Candidates for the scholarship, therefore, who have satisfied the condition of eligibility which requires a record of at least two years of undergraduate work in the University of Manitoba, are relieved of the necessity of passing a preliminary or qualifying examination, provided they hold standing in Greek equivalent at least to that of the Second Year in Arts.

If the University of Manitoba did not enjoy this privilege under the Statute on Colonial and Indian Universities, or if the two years of undergraduate work of the prospective candidate were not sufficient to relieve him from Responsions, a qualifying examination would be held prior to the election.

This examination is not competitive, but is intended to give assurance that all candidates are fully qualified to enter on a course of study at Oxford University. It is therefore based on the requirements for Responsions. Rhodes scholars may be selected from candidates who have successfully passed this preliminary examination.

Candidates must offer the following:

(1) Arithmetic—the whole.

(2) Either Algebra—

Addition, Subtraction, Multiplication, Division, Greatest Common Measure, Least Common Multiple, Fractions, Extraction of Square Root, Simple Equations containing one or two unknown quantities, and problems producing such equations.

Or the Elements of Geometry—

Elementary Questions, including propositions enunciated by Euclid, and easy deductions therefrom, will be set on the subject-matter contained in the following portions of Euclid's Elements, viz.:

Book I—The whole, excluding propositions 7, 16, 17, 21.

Book II—The whole, excluding proposition 8.

Book III—The whole, excluding propositions 2, 4 to 10, 13, 23, 24, 26 to 29.

Any method of proof will be accepted which shows clearness and accuracy in geometrical reasoning. So far as possible, candidates should aim at making the proof of any proposition complete in itself. In the case of propositions 1 to 7, 9, 10 of Book II, algebraical proofs will be allowed.

(2) Greek and Latin Grammar.



- (3) Translation from English into Latin prose.  
 (4) Greek and Latin Authors.

Candidates must offer two books, one Greek and one Latin or Unseen Translation.

The following portions of the undermentioned authors will be accepted:

- Demosthenes—De Corona.  
 Euripides—Any two of the following plays: Hecuba, Medea, Alcestis, Bacchae.  
 Homer—(1) Iliad 1—5, or 2—6; or (2) Odyssey 1—5, or 2—6.  
 Plato—Apology and Crito.  
 Sophocles—Antigone and Ajax.  
 Xenophon—Anabasis—1-4, or 2-5.  
 Caesar—De Bello Gallico, 1-4.  
 Cicero—(1) the first two Philippic Orations; or (2) the first three Catiline Orations, and In Verrem, Act I; or (3) the Orations, Pro Murena and Pro Lege Manilia; or (4) the treatises, De Senectute and De Amicitia.  
 Horace—(1) Odes 1-4; or (2) Satires; or (3) Epistles.  
 Livy—Books V, VI.  
 Virgil—(1) the Bucolics, with Books 1-3 of the Aeneid; or (2) the Georgics; or (3) the Aeneid, Books 1-5, or 2-6.

The texts used in setting the examination papers will be those of the Series of Oxford Classical Texts, so far as these have been published by the Oxford University Press.

Papers covering this range of study will be prepared by examiners appointed by the Trustees, and will be sent to each centre, where required, and at a date publicly announced, the examination will be held under proper supervision, and the papers returned to the examiners. A list of those who have successfully passed this test will, as soon as possible, be furnished the Committee of Selection, and from this list, and a list of other eligible candidates, the Committee will proceed to elect the scholar.

Candidates for the scholarship should, during the month of December, notify the Secretary of the Committee of Selection of their intention of becoming such candidates, forwarding at the same time a detailed statement of their record, proof of all matters necessary to establish their eligibility, and a list of references with whom the Committee of Selection may communicate respecting their fitness for appointment. The decision of the Committee of Selection is final.

The following extract from the will of the late Right Hon. Cecil John Rhodes serves to indicate some of the considerations taken into account in elections to this scholarship:

"My desire being that the students who shall be elected to the scholarships shall not be merely bookworms, I direct that in the election of a student to a scholarship regard shall be had to (1) his literary and scholastic attainments; (2) his fondness of and success in manly outdoor sports, such as cricket, football and the like; (3) his qualities of manhood, truth, courage, devotion to duty, sympathy for and protection of the weak, kindness, unselfishness and fellowship; and (4) his exhibition during school days of moral force of character and of instincts to lead and to take an interest in his schoolmates; for those later attributes will be likely in after life to guide him to esteem the performance of public duties as his highest aim. As mere suggestions for the guidance of those who will have the choice of students for the scholarships, I record that (1) my ideal qualified student would combine these four qualifications in the proportions of three-tenths for the first, two-tenths for the second, three-tenths for the third, and two-tenths for the fourth qualifications, so that according to my ideas, if the maximum number of marks for any scholarship were 200, they would be apportioned as follows: 60 to each of the first and third qualifications and 40 to each of the second and fourth qualifications; (2) the marks of the several qualifications would be awarded independently as follows (that is to say) the marks for the first qualification by examination, for the second and third qualification respectively by ballot by the fellow-students of the candidates, and for the fourth qualification by the head master of the candidate's school; and (3) the results of the awards (that is to say, the marks obtained by each candidate for each qualification) would be sent as soon as possible for consideration to the trustees or to some person or persons appointed to receive the same, and the person or persons so appointed would ascertain by averaging the marks in blocks of 20 marks each of all candidates the best ideal qualified students."

No student shall be qualified or disqualified for election to scholarship on account of his race or religious opinions.

The Committee of Selection is asked to furnish to the Trustees as full a statement as possible of the school and college career of each elected scholar, with the special grounds of his appointment, together with suggestions, if desired, as to the course of study for which he is best fitted.

A qualified student who has been elected as aforesaid shall within six calendar months after his election, or as soon thereafter as he can be admitted into residence, or within such extended time as the Trustees shall allow, commence residence as an undergraduate at some college in the University of Oxford. The scholarship is payable to him from the time when he commences such residence.

Any inquires about Oxford, its colleges and the courses of study there, should be addressed to F. J. Wylie, Esq., the Oxford agent of the Rhodes Trustees.

Copies of Oxford Responson papers for past years can be obtained from the Copp, Clark Company, Toronto. The Student's Handbook of Oxford can be ordered at the same address. It gives full information about the examinations of the University, subject to changes made since the last edition was issued. "Oxford As It Is," a small pamphlet prepared by Mr. Louis Dyer, of Harvard and Balliol Colleges, for the use of American candidates, gives all essential information in a condensed form. It can also be ordered from the Copp, Clark Company, Toronto. "Oxford and Its Colleges," written by Mr. J. Wells, of Wadham College, and "Oxford and Oxford Life," edited by the same gentleman, may be recommended to those who wish to gain full information about the University and its Colleges.

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## MEDALS IN ARTS AND SCIENCE

### (a) The Governor-General's Medal

The Governor-General's *Gold Medal*, the gift of his Royal Highness the Governor-General is awarded annually to the student of the Third Year in Arts ranking highest on the aggregate of the examinations of the full course of the first three years in Arts.

### (b) University Medals in Arts

A *Gold Medal* is awarded annually to the student standing first in order of merit at the final examination of each of the following courses or subjects in Arts, provided his standing on the aggregate of the marks be 80 per cent. or above: \*General Course; Philosophy (English); Philosophy (Latin); Mathematics; Natural and Physical Science; Greek major, Latin major; Hebrew major; English major; French major; German major; History major; Political Economy major.

### (c) University Medal in Science

A *Gold Medal* is awarded annually to the student standing first in the order of merit at the final examination in the course in Science, provided his standing on the aggregate of the marks be 80 per cent. or above.

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## MEDALS IN PHARMACY

A *Silver Medal*, offered by the Council of the Manitoba Pharmaceutical Association, is awarded annually to the student standing first

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\*In the award of the medal in the General Course, all five subjects shall be taken into account, according to the following method: The percentage of the highest candidate in each subject shall be raised to 100, and that of each of the other candidates in proportion, and the medal awarded on the basis of these raised percentages.

in order of merit at the examination of the first year of the diploma course in Pharmacy, provided his standing on the aggregate of the marks be 80 per cent. or above.

A *Gold Medal*, offered by the Council of the Manitoba Pharmaceutical Association, is awarded annually to the student standing first in the order of merit at the examination of the Second Year of the diploma course in Pharmacy, provided his standing on the aggregate of the marks be 90 per cent. or above.

A *Silver Medal*, offered by the Council of the Manitoba Pharmaceutical Association, is awarded annually to the student standing first (or second) in the order of merit at the examination of the Second Year of the diploma course in Pharmacy, provided his standing on the aggregate of the marks be 80 per cent. or above.

A *Silver Medal*, known as the Flexon Silver Medal, offered by the Council of the Manitoba Pharmaceutical Association, in memory of Mr. Charles Flexon, a former president of the Association, is awarded annually to the student ranking highest (with 85 per cent. or above) in the subject of Chemistry of the Second Year of the diploma course in Pharmacy.

### DEGREES IN ABSENTIA

No degree will be conferred *in absentia* except where good reasons for absence have been submitted to, and approved by the Board of Studies, or the Council, and an additional fee of ten dollars may be exacted in each case where permission is granted.

### GRADING OF DEGREES

All degree diplomas granted by the University are graded as follows: *rite*, indicating standing between the pass mark and 66 per cent. inclusive; *cum laude*, indicating standing between 67 per cent. and 79 per cent., inclusive; *magna cum laude*, indicating standing of 80 per cent. and above.

### UNIVERSITY DRESS

The materials and colors prescribed by the Council for the hoods to be worn by graduates of the University are as follows:—

B.A.—Black stuff, edged with white rabbit skin, with a braid of green silk.

M.A.—Black corded silk, lined with scarlet corded silk.

M.D.—Black cashmere, lined with purple corded silk.

M.D., C.M.—Black cashmere, lined with purple corded silk and edged with violet silk.

LL.B.—Black silk stuff, lined with white silk, edged with narrow white rabbit skin, and narrow green silk braid along the border.

B.S.A.—Black, lined with green, and edged with white rabbit-skin.

B.H.Ec.—To be determined.

B.Sc. (Phar.)—Black, lined with light blue and edged with white rabbit skin.

B.Sc. (C.E.)—Black, lined with yellow and edged with white rabbit skin.

M.C.E.—Black, lined with yellow.

B.Sc. (E.E.)—Black, lined with yellow and edged with white rabbit skin.

M.E.E.—Black, lined with yellow.

B.M.E.—Black, lined with yellow and edged with white rabbit skin.

B.Sc.—Black, lined with gold yellow and edged with white rabbit skin.

LL.D.—Scarlet cloth lined with white moire silk.

## UNIVERSITY BOOK-STORE

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In order to ensure prompt and reliable service in connection with the supply of text books, notebooks and other materials for students' use, the University has opened a book-store in the basement of the Arts Building on Kennedy street, at which everything of this nature can be purchased at the lowest possible prices. A year's experience in connection with this matter has placed the management in a position to render satisfactory service. Students are urged to place their orders early. Surplus copies of many texts left over from last year's business will make it possible for students who desire to anticipate next session's courses by summer reading to supply themselves with some at least of the necessary books before leaving for the vacation. Other books not on hand may be forwarded by mail during the summer when received.

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## FEES

The following fees are required and must be paid to the Accountant of the University in advance. Regular Examination fees are payable at the time of registration, degree fees not later than the last date for payment of second term tuition fees. Supplemental examination fees are payable at the time application for the examination is made. The fees for admission *ad eundem statum* or *ad eundem gradum* are payable at the time application therefor is made.

### Examinations Above Matriculation

For each Regular Annual Examination (payable at the time registration for the year's work is made).	\$10.00
For each Supplemental Examination*—	
One subject.....	6.00
Two subjects.....	7.00
Three subjects.....	8.00
Registration (payable the first time a student registers in any Faculty).....	\$2.00

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\*For further details see page 88.

### Tuition

For Arts, Science, Pre-Engineering and Pre-Medical Students—	
A full course, any year.....	\$50.00
A single subject (without laboratory work) (First and Second Years or General Course, Third and Fourth Years).....	11.00
A single subject as above, with laboratory work.....	12.50
A major subject, Third and Fourth Years.....	25.00
A minor subject, Third and Fourth Years.....	12.50

For students in Pharmacy—	
Any year.....	\$75.00

(The tuition fee of each special student is determined by the Dean of the Faculty concerned after consultation with the Professor in whose department the student receives instruction).

Payment of Second Term tuition fees may be deferred to first week of the Second Term, but only on the basis of a slightly higher tuition fee as follows:

	Per Term in Instalments
Arts, Science and Pre-Engineering and Pre-Medical years.....	\$27.50
Pharmacy.....	40.00

### Degrees

For the Degree of B.A.....	\$10.00
For the Degree of M.A.....	10.00
For the Diploma in Pharmacy.....	10.00
For the Degree of B.Sc. (Phar.).....	10.00
For the Degree of B.Sc.....	10.00
For the Degree of M.Sc.....	10.00
For the conferring of any Degree <i>in absentia</i> (for which the consent of the Board of Studies or the University Council must be secured), an additional fee of.....	10.00
For admission <i>ad eundem statum</i> .....	5.00
For admission <i>ad eundem gradum</i> .....	10.00

### Appeals

Each paper.....	\$2.00
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### Special

For a Certificate of Standing.....	\$2.00
For a Statement of Marks, on request.....	1.00
For a Complete Bound Set of Examination Papers.....	1.00

### Caution Money

Arts in the special courses in Mathematics and Natural and Physical Science, Science students, Pharmacy students, and all others taking practical or laboratory classes in the University, are required to deposit with the Accountant at the beginning of each session the sum of \$5.00. Against this will be assessed the value of all apparatus broken or materials wasted in any way other than in the legitimate course of class work, and the balance will be refunded at the close of the term. All other students make a caution money deposit of \$2.00.

## THE UNIVERSITY LIBRARY

*Frank Emmett Nuttall, M.A., Librarian*

The Library occupies three rooms in the old Law Courts, of which the main reading room was formerly the library of the Law Society. The total number of volumes may be estimated at 30,000, and the annual accessions are about 2,000 volumes. The nucleus of the collection was that portion of the Isbister library which escaped destruction by fire, but the greater part of it has been acquired during the past twelve years by purchase or by gift.

The following periodicals are received by the University:

- |  |  |
|--|--|
| Action Française   | Bookman (New York)   |
| Agricultural Gazette of Canada                                 | Bookman (London)   |
| Agricultural Research Institute, Pusa:                         | Botanical Abstracts  |
| Bulletin   | Botanical Gazette  |
| American Architect and Architectural Review                    | Brain  |
| American Economic Review                                       | Bulletin of the American Mathematical Society                            |
| American Historical Review                                     | Bulletin Astronomique  |
| American Journal of Anatomy                                    | Bulletin of the Bureau of Education (Department of the Interior, U.S.A.) |
| American Journal of Archaeology                                | Bulletin of the Geological Society of America                            |
| American Journal of International Law                          | Bulletin of the National Tax Association                                 |
| American Journal of Mathematics                                | Bulletin de la Société biochimique de France                             |
| American Journal of Pharmacy                                   | Bulletin de la Société chimique de France                                |
| American Journal of Philology                                  | Bulletin of the Toronto Public Library                                   |
| American Journal of Physiology                                 |  |
| American Journal of Science                                    |  |
| American Journal of Semitic Languages and Literatures          |  |
| American Mathematical Monthly                                  | Canadian Bookman   |
| American Mineralogist  | Canadian Engineer  |
| American Naturalist  | Canadian Entomologist  |
| Anatomischer Anzeiger  | Canadian Field Naturalist  |
| Ancient Egypt  | Canadian Finance   |
| Anglia   | Canadian Forum   |
| Anglia: Beiblatt   | Canadian Historical Review   |
| Annalen der Physik   | Canadian Journal of Mental Hygiene                                       |
| Annales de Chimie  | Canadian Magazine  |
| Annales de Physique  | Canadian Mining Journal  |
| Annals of the American Academy of Political and Social Science | Canadian Municipal Journal   |
| Annals of Archaeology and Anthropology                         | Canadian Railway and Marine World  |
| Annals of Botany   | Canadian Student   |
| Annals of Mathematics  | Car  |
| Architectural Forum  | Centralblatt für Mineralogie, Geologie und Palaeontologie                |
| Architectural Record   | Century  |
| Architectural Review (London)                                  | Chemical Age   |
| Architecture   | Chemical and Metallurgical Engineering                                   |
| Archives Italiennes de Biologie                                | Chemical News  |
| Art and Archaeology  | Chemisches Zentralblatt  |
| Astronomical Journal   | Clarkson Bulletin  |
| Astrophysical Journal  | Classical Journal  |
| Atlantic Monthly   | Classical Philology  |
| Auk  | Classical Quarterly  |
|  | Classical Review   |
| Bankers Magazine (American)                                    | Classical Weekly   |
| Bankers' Magazine (English)                                    | Combustion   |
| Beama  | Commercial Intelligence Journal  |
| Bengal Agricultural Journal                                    | Comptes rendus de l'Académie des Sciences                                |
| Berichte der deutschen botanischen Gesellschaft                | Comptes rendus de la Société de Biologie                                 |
| Berichte der deutschen chemischen Gesellschaft                 | Concrete and Constructional Engineering                                  |
| Bibliographischer Monatsbericht                                | Concrete Builder   |
| Bibliothèque Universelle                                       | Concrete Highway Magazine  |
| Biochemische Zeitschrift                                       | Concrete in Architecture and Engineering                                 |
| Biometrika   | Construction   |
| Blackwood's Magazine   | Contemporary Review  |
| Booklist   | Contract Record  |
|  | Contractor's Atlas   |

- Cumulative Book Index  
 Current History  
 Deutsche Literaturzeitung  
 Dial  
 Dickensian  
 Dominion of Canada: Meteorological Service, Daily Weather Maps  
 Drama  
 Druggists' Circular  
 Economica  
 Economic Geology  
 Economist  
 Educational Review  
 Electrical Experimenter  
 Electrical Industries  
 Electrical News  
 Electrical Review (American)  
 Electrical Review (English)  
 Electrical World  
 Electrician  
 Electric Journal  
 Electric Railway Journal  
 Empire Mail  
 Endocrinology  
 Engineer  
 Engineering  
 Engineering and Contracting  
 Engineering and Mining Journal  
 Engineering News Record  
 Engineering Review  
 Englische Studien  
 English Historical Review  
 English Journal  
 Entomological News  
 Eugenics Review  
 Euphorion  
 Farmers' Telegram  
 Financial Post of Canada  
 Fortnightly Review  
 Fortschritte der Mineralogie, Krystallographie und Petrographie  
 Garden Cities and Town Planning  
 Gas Journal  
 Gazzetta Chimica Italiana  
 General Electric Review  
 Génie Civil  
 Geographical Journal  
 Geological Magazine  
 Good Furniture  
 Grinnell Company Bulletin  
 Harper's Magazine  
 Hibbert Journal  
 History  
 Hoppe-Seyler's Zeitschrift für physiologische Chemie  
 House and Garden  
 Hydro-Electric Power Commission of Ontario: Bulletin  
 Illustration  
 Independent and Weekly Review  
 Industrial Management  
 Inter-America (English)  
 Inter-America (Spanish)  
 International Conciliation  
 International Index to Periodicals  
 International Journal of Ethics  
 International Studio  
 Iron Age  
 Jahrbucher für Wissenschaftliche Botanik  
 Johns Hopkins University Circular  
 Journal of Agricultural Research  
 Journal of American Folk-lore  
 Journal of the American Institute of Architects  
 Journal and Transactions of the American Society of Heating and Ventilating Engineers  
 Journal and Transactions of the American Institute of Electrical Engineers  
 Journal and Transactions of the American Society of Refrigerating Engineers  
 Journal and Transactions of the Society of Automotive Engineers  
 Journal of the American Oriental Society  
 Journal of Biological Chemistry  
 Journal of the Canadian Bankers' Association  
 Journal of the Chemical Society  
 Journal of Comparative Legislation and International Law  
 Journal des Economistes  
 Journal of the Engineers' Club of St. Louis  
 Journal of English and German Philology  
 Journal of Geology  
 Journal of Hygiene  
 Journal of Immunology  
 Journal of Infectious Diseases  
 Journal of the Institute of Actuaries  
 Journal of the Institute of Bankers  
 Journal of the Institution of Electrical Engineers  
 Journal of the Iron and Steel Institute  
 Journal de Mathématiques  
 Journal of the New England Water Works Association  
 Journal of the New York Entomological Society  
 Journal of Parasitology  
 Journal of Pathology and Bacteriology  
 Journal of Philosophy  
 Journal of Physical Chemistry  
 Journal of Physiology  
 Journal de Physiologie et de Pathologie Générale  
 Journal de Physique et Le Radium  
 Journal of Political Economy  
 Journal of Religion  
 Journal of the Röntgen Society  
 Journal of the Royal Asiatic Society  
 Journal of the Royal Astronomical Society of Canada  
 Journal of the Royal Institute of British Architects  
 Journal of the Royal Microscopical Society  
 Journal of Urology  
 Journal of the Western Society of Engineers  
 Justus Liebig's Annalen der Chemie  
 Labour Gazette  
 Lancet  
 Lefax (Civil and Mining)  
 Lefax (Electrical)  
 Lefax (Mechanical)  
 Library Journal  
 Literarisches Echo  
 London Mercury  
 Machinery  
 MacLean's Magazine  
 Manitoba Free Press (Morning)  
 Manitoba Gazette  
 Manitoban  
 Manitoba Veteran  
 Mathematical Gazette



- Mathematische Annalen  
 Mechanical Engineering  
 Mechanical World  
 Medical Research Council: Special Report Series  
 Memoirs of the Department of Agriculture in India—Bacteriological Series  
 Memoirs of the Department of Agriculture in India—Botanical Series  
 Memoirs of the Department of Agriculture in India—Chemical Series  
 Memoirs of the Department of Agriculture in India—Entomological Series  
 Messenger of Mathematics  
 Mind  
 Mining and Scientific Press  
 Modern Language Notes  
 Modern Language Review  
 Modern Philology  
 Monthly Bulletin of Agricultural Statistics  
 Monthly Notices of the Royal Astronomical Society  
 Monthly Report of the Department of Trade, etc., of Canada  
 Municipal and County Engineering  
  
 Nation and The Athenaeum  
 Nation (New York)  
 Nationaliste  
 Natural History  
 Nature  
 N.E.A. Bulletin  
 Neue Rundschau  
 New Phytologist  
 New Republic  
 New Statesman  
 New York Times Index  
 Nineteenth Century and After  
 North American Flora  
 Notes and Queries  
 Nouvelles Annales de Mathématiques  
 Nuovo Cimento  
  
 Observatory  
 Ontario Library Review  
  
 Petite Illustration  
 Pfluger's Archiv für die gesamte Physiologie  
 Pharmaceutical Journal  
 Philologische Wochenschrift  
 Philologus  
 Philosophical Magazine  
 Philosophical Transactions of the Royal Society of London (Series A)  
 Philosophical Transactions of the Royal Society of London (Series B)  
 Physical Review  
 Physical Society of London: Proceedings  
 Physikalische Zeitschrift  
 Physiological Abstracts  
 Physiological Reviews  
 Poet Lore  
 Poetry Review  
 Political Science Quarterly  
 Polytechnic Magazine  
 Popular Astronomy  
 Power  
 Power Plant Engineering  
 Proceedings of the Academy of Political Science  
 Proceedings of the American Entomological Society  
 Proceedings of the Entomological Society of Washington  
  
 Proceedings of the Institute of Radio-Engineers  
 Proceedings of the Institution of Civil Engineers  
 Proceedings of the London Mathematical Society  
 Proceedings of the National Academy of Sciences of U.S.A.  
 Proceedings of the Royal Society (Series A)  
 Proceedings of the Royal Society (Series B)  
 Proceedings of the Society for the Promotion of Engineering Education  
 Proceedings of the Zoological Society of London  
 Publications of the Dominion Astrophysical Observatory  
 Publications of the Modern Language Association of America  
  
 Quarterly Journal of Economics  
 Quarterly Journal of the Geological Society  
 Quarterly Journal of Mathematics  
 Quarterly Journal of Microscopical Science  
 Quarterly Journal of North Dakota  
 Quarterly Journal of the Royal Meteorological Society  
 Quarterly Journal of the University of North Dakota  
 Quarterly Review  
 Queen's Quarterly  
  
 Railway Age  
 Readers' Guide to Periodical Literature  
 Review of Applied Entomology (Series A)  
 Review of Applied Entomology (Series B)  
 Revue des Deux Mondes  
 Revue Générale de l'Electricité  
 Revue Historique  
 Revue de Métaphysique et de Morale  
 Revue Mondiale  
 Rhodora  
 Romania  
 Round Table  
  
 Science  
 Science Abstracts—Sec. A—Physics  
 Scientia  
 Scientific American  
 Scientific American Monthly  
 Scientific Monthly  
 Seasonable Hints: Eastern and B.C. Edition  
 Seasonable Hints: Prairie Edition  
 Smithsonian Miscellaneous Collections  
 Spectator (London)  
 Spectator (New York)  
 Statist  
 Statistical Bulletin, Metropolitan Life Insurance Co.  
 Successful Methods  
  
 Telephone Engineer  
 Temps  
 Times (London), Educational Supplement  
 Times (London), Engineering Supplement  
 Times (London), Literary Supplement  
 Times Weekly Edition  
 Transactions of the Actuarial Society of America  
 Transactions of the American Society of Civil Engineers  
 Transactions of the American Institute of Electrical Engineers  
 Transactions of the American Mathematical Society

Transactions of the Faraday Society  
 Transactions of the Illuminating Engineering Society  
 Transactions of the Royal Society of Canada

United Empire

United States Geological Survey: Bulletin, and Water Supply Papers

University of Illinois Studies in Language and Literature

University of Illinois Studies in the Social Sciences

University of Iowa: Studies

University Monthly (Toronto)

University of the State of New York: Bulletin, New York State Library; Bibliographic Series

University of Wisconsin Studies in Language and Literature

University of Wisconsin Studies in Science

Valve World

Vasari Society: Old Masters

Weekly Bulletin: Department of Trade and Commerce, Canada

Western Canada Contractor

Western Canada Coal Review

Western Municipal News

Wochentliches Verzeichnis

Yale Review

Zeitschrift für Botanik

Zeitschrift für Instrumentenkunde

Zeitschrift für Physikalische Chemie

Zeitschrift für Krystallographie und Mineralogie

Zeitschrift für Technische Physik

Zoologica

## UNIVERSITY OF MANITOBA ALUMNI ASSOCIATION

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Every graduate of the University of Manitoba is eligible for membership in the Alumni Association. The Association serves a two-fold purpose: it enables graduates to remain in touch with each other and with their Alma Mater, and to retain an interest in higher learning, and it brings to the support of the University an organized and well-informed body of public opinion whose guidance and sympathy are invaluable.

The Annual meeting of the Alumni Association is held on Convocation day in each year when general business is transacted, reports received and officers elected for the ensuing term. The list of officers for 1921-1922 is as follows:

<i>President</i> .....	T. Glen Hamilton, M.D. (1903)
<i>Vice-President</i> .....	Rev. G. A. Wells, C.M.G., B.A. (1910)
<i>Treasurer</i> .....	Max Steinkopf, B.A. (1902)
<i>Secretary</i> .....	

### *Directors*

P. M. Abel, B.S.A. (1916)  
 A. J. H. Andrews, M.A. (1910)  
 R. F. Argue, M.A. (1911)  
 J. T. Beaubien, B.A. (1910)  
 C. J. Bodle (Pharmacy 1916)  
 Eileen Bulman, B.Sc., M.A. (1918)  
 F. W. Clark, B.A., Ph.D. (1922)  
 E. D. Honeyman, B.A., LL.B. (1909)  
 Elsie Moore, B.A. (1902)  
 W. W. Musgrove, M.D. (1906)  
 B. C. Parker, B.A., LL.B. (1907)  
 A. J. Taunton, B.C.E. (1912)

## STUDENT ORGANIZATIONS

### University of Manitoba Students' Union—1922-1923

<i>Hon. President</i> .....	E. D. Honeyman, B.A.
<i>President</i> .....	Clifford Dick, M.A. (Law)
<i>Vice-President</i> .....	H. E. Popham (Medicine)
<i>Secretary</i> .....	C. W. Brock (Arts)
<i>Treasurer</i> .....	Vincent MacLean (Engineers)

*Committee*— J. E. Miller (Pharmacy); H. Dennison (Wesley); J. Poyntz (St. John's); G. Brownell (Science); H. Johnston, B.A. (Manitoba); J. A. Weldon (Accountancy); E. J. Thorlakson (Dramatics); W. J. Rae (Agriculture); D. Finn (Debating).

### The Manitoban

*The Manitoban* is the joint organ of the Alumni and the students and for three years has been published weekly throughout the academic year. A committee has under consideration the recommendation of the retiring editor, G. Hasted Dowker, that the paper be made a bi-weekly and that the Editor-in-chief be a graduate. The following have been appointed to the staff for 1922-1923:

Managing Editor.....	R. Cecil Drew
Business Manager.....	F. W. Bamford
Advertising Manager.....	Elsie Mills, B.A.

### Intercollegiate Young Men's Christian Association

In the Winnipeg Colleges and University are organized Young Men's Christian Associations. These Associations carry on the work in the colleges and are integral parts of the Intercollegiate Association, which directs the general policy and harmonizes the various activities of all. The policy of the organization is directed by an advisory board selected from the members of the faculties of the University and Colleges, and from the business men of the city. The different lines of work undertaken by the Association are: Bible and Mission study, the teaching of foreigners and prisoners in the provincial jail, the publishing of a handbook and the securing of rooms for students in the fall.

Intercollegiate Secretary.....	Robert Schofield, M.A.
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### Arts Y.M.C.A.

President.....	S. M. Gilmour	Secretary.....	J. McNeill
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### Volunteer Band

President.....	F. D. Saunderson	Secretary.....	Miss B. Stephen
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**Arts Council—1922-1923**

Senior Stick.....	C. W. Brock
Lady Stick.....	Florence Stovel
Secretary-Treasurer.....	Edna Schweitzer
President of Fourth Year and Vice-Stick.....	R. Cecil Drew
President Men's Athletics.....	H. Young
President Women's Athletics.....	Agnes Mackay
Chairman Social Committee.....	W. Scott
President Debating Society.....	D. McLeod
Third Year Representative.....	H. Saunderson
Second Year Representative.....	F. Armstrong
First Year Representative.....	To be appointed
Representative from Men's Self Government Committee.....	R. Babb
Representative from Women's Self Government Committee.....	Elva Waldon

**Science Council—1922-1923**

Hon. President.....	Dr. R. C. Wallace
President.....	G. Brownell
Vice-President.....	Miss Kirk Scott
Secretary.....	G. Ward
Treasurer.....	To be appointed
Representative on <i>Manitoban</i> .....	H. A. Watson
Conveners Social Committee.....	Miss M. Ferguson and E. Holland
Convener Debating Committee.....	D. Finn
Convener Athletic Committee.....	E. Johnson
Third Year Representative.....	A. L. Swanton
Second Year Representative.....	J. Webb
First Year Representative.....	To be appointed

**Arts Athletic Council—1922-1923**

President.....	H. Young
Director of Tennis.....	A. Gray
Director of Track.....	E. Babb
Director of Football.....	R. L. Dick
Director of Hockey.....	W. Millar
Director of Basketball.....	E. Dandy
Director of Rugby.....	W. Scott
Director of Curling.....	D. McLeod
Third Year Representative.....	To be appointed
Second Year Representative.....	To be appointed
First Year Representative.....	To be appointed

**Executive of Alpha-Gamma (Associated Co-Eds.)—1922-1923**

Lady Stick.....	Florence E. Stovel
President of Athletics.....	Agnes Mackay
President of S. C. M.....	Edna Schweitzer
President of S. G. C.....	Elva Waldon
Vice-President of Ek-o-le-la.....	Vera Gunn
Secretary.....	Gretta Gordon
Poster Maker.....	Mary Cross
Cafeteria Representative.....	Marjory Hoole
Treasurer.....	From Class 26

**Students' Scientific Society****1922-1923**

Hon. President.....	Prof. C. H. O. Donoghue
President.....	H. A. Watson
Vice-President.....	Arlee Nuser
Secretary.....	C. F. Goodeve
Treasurer.....	R. Reid
Social Committee.....	Miss M. Ferguson; D. Finn; G. Hartt; G. Ward

**Pharmacy Society****1922-1923**

President.....	G. M. Barr	Secretary.....	F. S. Hill
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**Dramatic Society****1922-1923**

President.....	E. J. Thorlakson	Secretary.....	J. W. Russell
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**Menorah Society****1922-1923**

President.....	E. A. Brotman, M.A., LL.B.	Secretary.....	Etta Levinson
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**Self-Government Committees****1922-1923***Women's Committee—*

Chairman.....	Elva Waldon
Fourth Year Representatives.....	Florence Stovel, Agnes Mackay, Gwen Hall, Mary Gordon
Third Year Representatives.....	Vera Gunn, Florence Harris, Myrtle Johnston
Second Year Representatives.....	Beatrice Coutts, Dora Halstead
First Year Representatives.....	To be elected

*Men's Committee—*

Chairman.....	T. E. Babb
Fourth Year Representatives.....	C. G. Crosland, D. R. McLeod, S. Saper, D. H. Young
Third Year Representatives.....	J. Anderson, S. M. Gilmour, T. G. McCarthy, G. Smith
Second Year Representatives.....	D. Black, F. Finson, D. McLean, K. Ward
First Year Representatives.....	To be elected.





# UNIVERSITY OF MANITOBA

## TIME TABLE


Name Deen Paulta Course \_\_\_\_\_

Year III Term I

HOUR	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9-10					Exp.	
10-11	Canav 104		Shakespeare 16	Sub. Prose 201		
11-12		Harace 207		Harace 18	Shakespeare 16	
12-1		Shakespeare 16			Canav 207	
2-3		Exp	Harace 18	In. Quik 2		
3-4		Rom. Hist 16		Exp.		
4-5						
5-6						







In addition to the Calendar herein, the following  
Calendars are issued by the University of Manitoba and  
may be obtained on request from the Registrar:

1. Matriculation.
2. Engineering and Architecture.
3. Medicine.
4. Law.
5. Agriculture and Home Economics.
6. General.